

A
HANDBOOK OF PRACTICAL AND
WRITTEN WORK IN ECONOMICS

BY

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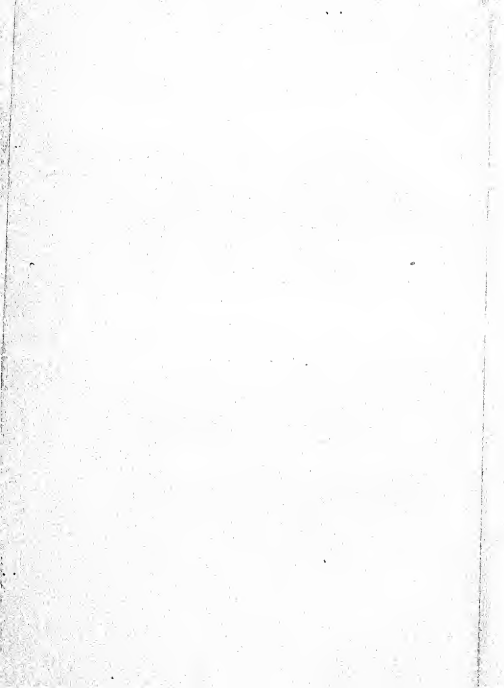
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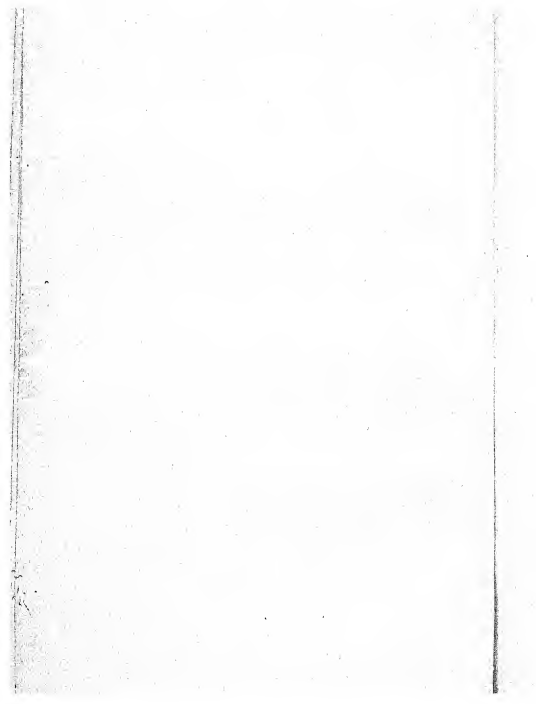
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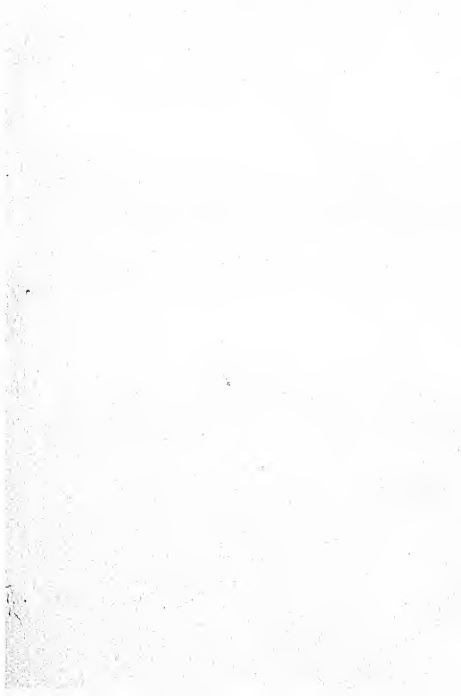


FOREWORD

When the written and practical work was first introduced into the intermediate course in economics, many of the teachers were strongly opposed to it. Many supposed that it was intended to make research workers out of the intermediate students, which it was urged was impossible without a background of theory. But the intention of the practical work was quite the reverse. *The practical work was intended to provide a background and a foundation for the right understanding of the theory.* After the first year's experience one of the teachers told me that the intermediate students with this practical background were grasping the definitions and concepts of economics as rapidly as the M. A. students did without it. At the conference of intermediate teachers held at Khurja two years later, all the teachers were unanimously in favour of the practical and written work. There can now be no doubt whatever that if this work is properly done, economics will become a real and live science, and a ready tool throughout life to the student; otherwise it is nothing but dull cramming and vague speculation. For carrying out the practical work correctly, for increasing greatly the value of this work to the student, and for shortening the time required to make the work successful, this little book will be found exceedingly useful.

HOLLAND HALL,
ALLAHABAD,
16th December, 1929. }

C. D. THOMPSON



INTRODUCTION

One thing that my intimate touch with the village life has brought home to me with a tremendous force is the general misery and abject poverty of the Indian agriculturist. His utter lack of information as to the means that would improve his condition, and also the lack of material resources that would secure him those things, have all tended to check his economic advancement; and there seems to be no likelihood in the immediate future that these defects would be removed. The appointment of the Royal Agricultural Commission indicates the extent to which the Government is interested in the improvement of the condition of the people in the villages. The chief drag on the wheel of progress of the country along this line has been the utter disinterestedness and apathy of the educated classes. It might have been said that the bourgeois are self-centred and selfish, deeply engrossed in the din and bustle of city life to devote any time to the work of rural uplift. But the pity is, that this apathy or disinterestedness is due mainly to the ignorance of the proper knowledge of the life and conditions in the rural areas. Those public men who know anything about it are busy in politics, and have no time to spare for the work of rural reconstruction. It is difficult to frame any scheme for improvement, until one is intimately acquainted with the conditions prevailing in the villages of India.

It is most unfortunate that all of our courses of study are so ill-devised that a student gets no chance of making himself conversant with the realities of life. His knowledge is limited to books. He is given no opportunity to exercise his power of observation, gather up facts for himself, and draw necessary conclusions from them. For the proper appreciation of the problems of the rural community it is essential that students be taken out often to the villages. A thing seen with the eyes makes a deeper impression than one read about in books. The practical work has much greater significance than the mere passing of the examination.

The success of the practical work depends very largely upon the teacher. He should make trips to the villages as pleasant as possible, and while in the village see that every student collects the facts and figures for himself.

This little book seeks to create in students love for the true spirit of research and if it is able to get even 15 per cent of the students of economics really interested in the rural problems, I shall consider my labours amply rewarded. It has, therefore, been prepared simply with a view to facilitate students, and others in their work of investigation. The students, because of their ignorance of the habits, whims and fancies of the farmer or the artisan, feel generally discouraged when they fail to induce them to give them the information they require. This is one reason why some students resort to the method of constructing imaginary budgets, or copying the budgets of the students of the

previous years. We have attempted in this book to acquaint the student with all the difficulties he would have to encounter in the work of his investigation, and the proper procedure he should adopt.

There is nothing ready made in this book. The student has to do everything himself. Only the lines on which the work has to be done are indicated.

An effort has also been made to cover the written work prescribed by the Board. A large number of subjects with bibliography has been given. A larger number of references to the periodicals and magazines dealing with economic subjects have been included. It is expected that this will stimulate the interest of the students in sources of information other than their text-books, and would help them to keep themselves posted in regard to information about the various current problems. To help the student to get an idea as to what is required of him in writing an essay, six essays have been included which are mainly the work of the students, but have been slightly improved by me in language and materials. They are by no means perfect models. It is very difficult to determine a model, and each person has his own ideas about it. But these essays simply indicate what is required of an average student, and this does not certainly hinder one from writing more if he has the time and patience.

In preparing the questionnaires I have freely used the material available on the subject and with these questionnaires we have been able to do most successfully the practical work for several years with our students.

I must acknowledge my thanks to my colleagues, Professors Saraswati Prasad and M. W. Maclay. I am more particularly indebted to my colleague, Professor Saraswati Prasad, M.A., L. T., for his suggestions and other help given to me in the preparation of this book.

I am also indebted to Professors C. D. Thompson and S. K. Rudra for their valuable criticism. I am further indebted to Professor Thompson for kindly writing the foreword to it.

E. C. COLLEGE, }
ALLAHABAD, }
July, 1929. }

E. C. B.

SECTION I
Practical Work

15
CIVIL
1874

INSTRUCTIONS FOR COLLECTING FACTS AND FIGURES

Extreme care should be exercised in the selection of a family for the purpose of collecting material for the construction of a family budget. Select a fairly representative family, containing earning as well as non-earning members (husband, wife, three children or three dependents). There is no objection to selecting a family having more than five members.

To avoid suspicion, make the object of your inquiry clear at the very outset. Very often the villagers are frightened by your appearance in the village, as they have very few visitors like you except the Government officials. Considering the nature of your inquiry they are likely to suspect you as agents of the Government, collecting facts for the enhancement of revenue. In such cases the farmers tend to give incorrect figures of their income and expenditure. Hopelessly exaggerated figures are given of the expenses of production, and astoundingly low figures of their income. This will defeat the purpose of your inquiry entirely.

Speak gently and kindly, as if you were his best friend, and that you were very keenly interested in the betterment of his economic position. Do not try to assume an official air, otherwise you will be supplied with wrong figures.

During investigation assume an attitude of seriousness, and avoid too much of laughing and joking.

Too much indulgence in these is very dangerous. The farmer or the artisan will then begin to think very lightly of your object, and will give you distorted figures, or may refuse to give you any information, or may start joking with you. In this way you will not get anywhere, and after the farmer has stayed with you for some time, he would like to go away to attend to his work at the farm, or the shop.

The questions that you ask should be very simple and plain, such as may be very easily understood by the illiterate people whose condition you are investigating. Questions touching self-respect or private life should be very carefully and judiciously asked. There is a grave danger of causing annoyance by asking such questions injudiciously.

Group the questions according to the subject. Class them under the headings of food, clothing, etc. Considerable difficulty would be experienced by asking the questions haphazardly. If you do that, you are likely to confuse them. Advantage in grouping the questions is that the farmer or the artisan will be helped by the association of ideas and facts, thus making it easier for them to supply the information required.

Do not ask questions too rapidly but ask them slowly, giving them enough time to think over. They are not as keen-witted as you are, and it takes a considerable time to recall facts and figures. Do not become impatient when they take too much time on any particular question.

First of all read the questions very carefully yourself in order that you may get a clear notion of the nature of the information needed. If you do not have written questions with you, you must in that case be sure of the kind of questions that you would ask. If you have beforehand an idea of what you want, you can, in the course of investigation, undertake a gentle cross-examination of the information tendered to get at the real facts.

If you find that the farmer or the artisan is not giving you the correct information, do not tell him straightaway that he is telling a lie, but tactfully get the information out of him. Ask him in this case a number of cross questions, and so word them that he does not detect that he is being subjected to a searching examination. He would resent it if he came to know of it.

Try to ascertain the losses of both the farmer and the artisan, if possible. It is generally difficult to get figures of losses, which are often very small, and liable to be forgotten. If you want to get information on this point, suggest to them some very common items of loss, *e.g.*, loss due to the death of cattle, loss due to wild animals and birds, and loss due to erosion, etc., or breakage of tiles before and after baking them in the case of a potter.

In cases where you suspect the information, get in touch with his immediate neighbours or friends. Ask the same questions concerning his condition from

them. Compare the two informations, accept the most probable, and reject the other.

Write the answers obtained very clearly below each question if possible ; otherwise the information obtained will become confusing ; and after some time it would be difficult to disentangle the facts one from the other.

As soon as you return from the work of investigation, sit down, and take the regular form prescribed by the Board or prepared by your teacher, and fill in the information collected.

QUESTIONNAIRE No. 1

Consumption Budget of Cultivator or Artisan family

- A.—1. Name of the village, tehsil and district.
2. Nearest post office, police station and the railway station.
3. Number in the family: men, women, children (below 14). Ages.
- (i) Number residing in the village.
- (ii) Number residing abroad and contributing to the income of the family.
- (iii) Dependents not living in the village.
- Total number in the family.
4. Caste of the family.

EXPENDITURE

- B.—5. For Food :
- (a) Flour.
- (b) Dal.
- (c) Oil or Ghee, or both.
- (d) Salt.
- (e) Massala.
- (f) Vegetables and Fruits.
- (g) Meat and Fish.
- (h) Sugar or Gur.
- (i) Milk.
- (j) Butter.
- (k) Tea.
- (l) Tobacco, Pan, Bhang, Charus, Liquor, Ganja, etc.

6. How much does $\left\{ \begin{array}{l} (a) \text{ an adult man} \\ (b) \text{ a woman} \\ (c) \text{ a child} \end{array} \right\}$ in the family eat?
7. How much milk is used by each adult person?
8. How much milk is used by the children?
9. Parts of the year when no dal is used.
10. Parts of the year when mangoes enter most into the diet.
11. Parts of the year when vegetables and sag are largely used.
12. When salt and red peppers only are used?
13. What grains used in what parts of the year?
14. Length of the periods during which different grains are used.

C.—Fuel and Light:—

- (i) Does it consist of firewood, or cowdung-cakes?
- (ii) If of both, then in what proportions?
- (iii) During what parts of the year are dung-cakes used?
- (iv) When is firewood used exclusively?
- (v) How are cowdung-cakes and firewood secured?
- (vi) Prevailing rates of cowdung-cakes and firewood?
- (vii) What is used for lighting purposes?
Kerosene oil, or vegetable oil?
- (viii) Are hurricane lamps, etc., used, or dias?
- (ix) Total expenditure on fuel and light.

D.—For Clothing.

1. For Males :

(a) Dhoties. How many generally purchased per adult man during the year ?

(i) How many has each adult man in the family ?

(ii) How many new and how many old ?

(iii) Prevailing prices of dhoties ?

(iv) How many purchased this year and for how much ?

(b) Kurtas. Use the same questions as in (a).

(c) Mirzais. " " "

(d) Bandi. " " "

(e) Topi or cap. " " "

(f) Safa. " " "

(g) Shoes. " " "

2. For Females :

(a) Lanhga or Sari. " 1(a)

(b) Phariya or head-dress. " "

(c) Kurti. " "

(d) Choli or bodice. " "

(e) Ornaments (bangles, tika-bindi, bichhuas, etc.)

3. For Children (all persons under 14) :

(a) Dhoties. Use the same questions.

(b) Kurtas. "

(c) Caps. "

(d) Shoes. "

✓ 4. For common use :

(a) Bedding—liháf, dohari, giláf, mattresses.

Repeat the same questions.

(b) Chárpáis. „

(c) Blankets, sheets, etc. „

5. Utensils:

(a) Number of household utensils and their quality.

(b) Names of those purchased during the year and their price.

(c) How long do these utensils last generally?

(d) How much spent upon the repairs of utensils?

E.—Payments to village servants.

1. Barber :

(a) What services does he render to the family during the year?

(b) How is he generally paid?

(c) What payments are actually made to him during the year?

(d) Does he receive anything at the marriage ceremonies? (If those amounts are included in the marriage expenses, then do not include them here).

(e) Total amount paid to the barber.

2. Washerman. Ask the same questions as for Barber.

3. Sweeper. Ditto.

4. Blacksmith. Ditto.
5. Carpenter. Ditto.
6. Any other village servant.

F.—The village religious functionaries.

1. The purohit. What payments are made to him?
2. The bhát. Ditto.
3. The hólí phuka. Ditto.
4. Mullás, mauvis, etc. Ditto.

G.—Education :

1. Are any members of the family reading ?
 - (a) In the village school.
 - (b) Outside the village school.
2. What fees are charged in the village school ?
3. What other expenses are incurred on education during the year for books, etc. ?

H.—Travelling expenses.

I.—Festivals :

1. What are the usual festivals ?
2. What are the usual festivals kept in the family ?
3. How are they celebrated ?
4. Were any of the festivals celebrated during the year ?
5. Probable amount of money spent on them.
6. Any fair or tamáshás held in the village or near about, during the year.
7. Did any members of the family go there ?
 - (a) Were any purchases made ?
 - (b) How much money spent on them ?

8. Did any kathá or some other religious ceremony take place in the house?

How much was spent on them?

J.—Social ceremonies :

1. Did any marriage take place in the family?

How much was spent on it?

2. Did any births take place?

How much spent on them?

3. Did any bidai take place in the house?

Expenses on them.

4. Did any deaths take place?

Expenses on them.

K.—House :

1. Were some repairs done to the house?

How much spent on them?

2. How many persons worked; for how many days?

3. Was outside labour used?

(a) How many?

(i) men, (ii) women, (iii) children.

(b) For how many days each worked?

(c) Rates of wages paid.

(i) men. (ii) women. (iii) children.

4. Total amount of expenditure incurred?

5. New building :

Expenses on the construction of a new building.

L.—Sickness.

M.—Medical expenses :

1. Was there any sickness in the family ?
2. Expenses :
 - (i) How long ill ?
 - (ii) What treatment ?
 - (iii) Amount paid for medicine and treatment.
 - (iv) How long absent from work ?
 - (v) At what time of the year ?
 - (vi) Money loss due to illness.
 - (vii) What is being done to prevent illness in the village ?

(This should be mentioned in the remarks columns only.)

QUESTIONNAIRE No. 2

Production Budget of Cultivator

✓A.—Address—Name of the village, tehsil, district, nearest police station, post office, hospital and railway station.

B.—Caste of the family.

C.—Number in the family :

Men, women, children (under 14).

1. Number residing in the village.

2. Number residing abroad contributing to the income of the family.

3. Dependents not living at the above address.

For the period 19 to 19 using the Fasli year.

D.—Total area under cultivation by the family :

(a) Occupancy : (i) in the village.

(ii) in the neighbouring villages.

(b) Non-occupancy : (i) in the village.

(ii) in the neighbouring villages.

(c) In the company of a fellow-cultivator.

(d) On batai (metayage tenure).

E.—Number of 'hals' kept by the family.

F.—Number of people generally working on agriculture.

G.—Area sown and harvested during the kharif (give the period over which the kharif lasts in that locality).

1. How much under each individual crop ?
 - (a) _____
 - (b) _____
 - (c) _____
 - (d) etc. _____
2. Number of 'hals' and tools used in kharif :
 - (a) Name the various processes of production.
 - (b) How much time is taken by each process ?
 - (c) What is the value of all tools of each kind ?
 - (d) Length of life of each tool.
 - (e) Depreciation on all tools of each kind.
 - (f) Expenses on repair of each tool.
3. Quantity of seed per bigha or acre used.
 - (i) Quantity of seed : home kept.
 - (ii) " " " purchased for cash.
 - (iii) " " " taken from sowkar.
 - (iv) " " " taken from the landlord.
 - (v) Total value of the seed.
4. Quantity of manure applied to the 'kharif' fields :
 - (i) Quantity of manure : home kept.
 - (ii) Quantity of manure : purchased.
Rate of purchase.
 - (iii) Total value of the manure.
 - (a) Where is the manure generally stored ?
 - (b) Try to ascertain the loss of manure due to rainfall, strong winds, etc.
5. Number of ploughings and levellings done to each field.

6. Number of people permanently engaged in kharif.

(a) Of the family :

(i) Men (ii) women (iii) children.

(b) Outside the family :

(i) Men (ii) women (iii) children.

(c) Rates of wages prevailing in the village.

(i) Men (ii) women (iii) children.

(d) How many days each was engaged ?

(e) Total amount paid in wages, during kharif.

N. B.—Do not include in the total of wages, wages not actually paid, of the members of the family working on the fields. But calculate them.

7. Number of waterings done to the kharif fields :

(a) Any extra hands engaged.

(b) Expenses.

8. Weedings done to each field :

(a) Any extra hands engaged.

(b) Expenses.

9. Days spent in reaping :

(a) Any extra hands engaged.

(b) Expenses.

10. Days spent in threshing :

(a) Any extra hands engaged.

(b) Expenses.

11. Gross produce in kind of each crop :

(a) Quantity paid to labourers.

(b) „ „ „ village menials.

- (c) Quantity paid to village artisans.
- (d) „ „ in almsgiving.
- (e) „ „ in batai or to sajhi.
- (f) „ sold. At what price?
- (g) „ of each grain, etc., given to the landlord.

(h) Prices at which sold to the landlord.

(i) Quantity of each grain given to the sowkar.

Prices at which sold to the sowkar.

(j) Quantity kept :

- (i) For seed.
- (ii) For home consumption.
- (iii) Value in money of the above.
- (iv) When consumed? Length of the period.

(k) Rent in money paid to the landlord or the Government.

(l) Money paid to the sowkar.

(m) Money paid to the co-operative society.

12. Gross produce in karbi or bhusa from each crop :

- (a) Quantity paid to the labourers.
- (b) „ „ „ village artisans.
- (c) „ „ „ village menials.
- (d) „ „ in almsgiving.
- (e) „ „ in batai or sajhi.
- (f) „ sold.

Prices at which sold.

(g) Quantity given to landlord.

Rates at which given.

(h) Quantity given to the sowkar.

Rates at which given.

(i) Quantity kept for the cattle.

Its value. When consumed? Length of the period.

(j) Estimate of crop consumed by the cattle during the period under investigation.

(Jāwar, bajra, etc.)

Its money value.

(k) Area sown and harvested during the rabi or kharif.

13. (a) No. of cattle used permanently in agriculture :

(b) No. of cattle other than those used in agriculture :

(i) Cost of their maintenance.

(ii) How much dana, salt, fodder, etc., given?

(iii) How much secured from field, and how much purchased?

(c) How many men look after the cattle?

Wages of men employed for the work.

(d) Expenses on shoeing, etc.

(e) Total expenditure on cattle.

H.—Did the cultivator borrow any capital?

(i) How much? (ii) At what rate?

I.—Net income from agriculture.

J.—Wages received from agriculture through the members of the family working on it.

K.—Total income from agriculture (gross).

L.—Income from other sources :

- (i) Family members engaged in other occupations.
- (ii) Engaged in service.
- (iii) Spending part of their time outside as manual labourers.
- (iv) Any investment in trade.
- (v) How much income accruing from it?
- (vi) Income from interest, or from grain loaned.
- (vii) Loan of the cattle, implements, etc.
- (viii) Income from carting.
- (ix) Any tax paid on this income.
- (x) Total income from these sources.

M.—1. Is there any income from milch-cattle?

- (i) Sale of milk, ghee, cowdung, etc.
- (ii) Give the price of each of the milch-cattle?
- (iii) What is the average milk yield of the farmer's cattle.
- (iv) What is the average period of elactation for (a) a cow (b) a buffalo.
- (v) For how many months are they dry?

2. Any income from the sale of :

- (i) Bhusa, (ii) Karbi, etc.

3. Total income from these sources.

4. Any income from the sale of trees?

How much?

5. Any income from poultry?

How much?

N.—Net income of the family.

Total income of the family from all sources.

QUESTIONNAIRE No. 3

Production Budget of an Artisan

1. Name.
2. Father's name.
3. Address.
4. Caste of the family.
5. Number of members in the family :
Men, women, children. Total.
(a) Members living in the village.
(b) Members living outside and remitting money home.
(c) Members living outside and depending upon the home.
Total.

6. Occupation.

A.—Name of the chief occupation.

B.—Name of the subsidiary occupation, if any.

(If it is agriculture, or any one of those mentioned in questionnaire No. 2, try to get the information on the same lines as indicated therein.)

INCOME.

1. Income from the chief occupation.

A.—How many kisans does he serve?

- (a) In the village.
- (b) In the neighbouring villages.
- (c) Total number of kisans.

B.—How many hals do your kisans have?

C.—Total number of hals.

D.—What is the customary rate of payment per hal for each fasal of rabi and kharif, in each of the villages in your jijnani? (Try to know the quantity of grain, bhusa, or any other farm produce which the cultivators generally pay to him.)

E.—What are the customary payments that he receives from his kisans on :—

- (a) Marriages of (i) a boy, and (ii) a girl.
- (b) Bidai of (i) a daughter; (ii) home-coming of a son's wife.
- (c) Death ceremonies: (i) dasma, (ii) thehim, and (iii) barsi.
- (d) Katha.
- (e) Festivals: (i) Dashehra, (ii) Holi, (iii) Divali, and others.
- (f) Births of (i) a boy, and (ii) a girl.

F.—Were there any marriages during the year in the families of his kisans?

- (a) How many?
- (b) How many of boys and how many of girls?

Ask the following questions about each and then calculate the total income from the source:—

1. What service was required of him or the members of his family?

2. For how many days ?
3. Had he to give certain things ? If yes, then try to get at the approximate value of those things. In this some of the following questions may help :—

- (i) Who supplied the materials for the making of those things ?
- (ii) What was the expense incurred in securing those materials ?
- (iii) For how many days or hours did he or some other members of the family work at the making of those things ?
- (iv) Find out the prevailing rate of wages of that class of workers.

G.—How much money did he receive ?

H.—How much of grain or of other things did he receive ?

Approximate money-value of the above.

I.—Did he or some of the members of his family dine ?

J.—How many of them, and for how many days or times ?

Calculate the money value of all these.

K.—What are the parts of the year, when he is very busy doing work for his kisans ?

Calculate the number of days of the year when he is so engaged.

L.—What are the usual things that he does for them ?

M.—Who supplies the materials ?

N.—If he himself, then does he charge separately for the materials or not ?

O.—If not, then does he get them free, or has he to buy them ? If the latter, then at what rate ?

P.—What quantities of the different materials did he purchase during the year ?

Q.—How much did he incur during the year on the purchase of the materials ?

R.—What are the tools required for his trade ?

Name.	Value.	Average life.	Depreciation per year.	Value of tool.
a.				Total interest on capital invested in tools.*
b.				
etc.				
Total.				

* Interest to be calculated at the prevailing village rate.

S.—Did he purchase any tools during the year ? If yes, then their names and details as above.

T.—Total in money (representing the interest on money invested in tools, and the depreciation.)

U.—How does he busy himself when not working for the kisans ?

V.—What is the average income per day in money, when he works on the job system ?

W.—Did he go out of the village during the slack season to earn his living? If yes, then where and for how many days?

Rate of wages.

X.—Total income from this source.

If living in the city :—

A.—1. Is he employed as a job-worker?

2. Does he have his own shop?

3. If yes, how much rent does he pay?

4. How many men work at his shop?

(i) How many family members?

(ii) How many others?

5. How much per day does he pay them?

6. Total expenditure on this item.

B.—Does he market his own product or does he work for some bigger shop-keeper? If the latter, state the terms.

C.—How much capital invested?

(i) How much borrowed?

(ii) At what rate?

D.—What does he do with the waste material, e.g., small chips of wood?

If he sells them, then at what rate?

E.—How much income from this source?

F.—1. How much does he spend on transporting the raw materials?

2. Where does he buy all the materials?

(i) From the city.

(ii) Outstations.

G.—Total income.

EXPENDITURE OF THE ARTISAN FAMILY.

For getting information leading to his family expenditure, please make use of Questionnaire No. 1.

INSTRUCTIONS FOR TABULATING THE MATERIAL COLLECTED.

In the budgets of both the farmer and the artisan the period selected to show rate of consumption should be the same.

For each crop of Rabi and Kharif prepare separate statements. You may do the same for different products of an artisan as well.

Always mention the unit.

1. By the net income is meant all that the farmer or artisan gets in cash or kind for his own and his family's consumption. His total receipts should equal the sum of all (his) expenses of consumption and all his expenses of production provided that what he gets for his own labour and capital (in cash or kind) is not included in the expenses of production.
2. Prepare two such detailed statements—one for a farmer and another for an artisan. Give in each case, the period of time for which the statement is made, the number of men, women, and children (in the

family) who help the farmer or the artisan in his work with their ages, and the village, town or district where he carries on his business. -

Do not use local weights or measures but give always the standard weights and measures.

Wages of himself and his family must invariably be calculated at a rate at which they would have been paid if they were employed by some one else for doing this kind of work, but these wages must not be included in the expenses of production.

$$\text{Depreciation} = \frac{V = \text{Value of the tool.}}{L = \text{Length of life of the tool.}} \div \frac{P = \text{Period of time for which depreciation is to be calculated.}}$$

Write a short introduction to every budget giving general information about the farmer, and the conditions prevailing in the village in which he is living. Only such conditions to be described which play some part in determining the course of production and consumption.

In the case of introduction to the Consumption Budgets mention the prevailing customs which affect the distribution of his income. Name those of his wants which must needs be satisfied as a matter of custom, or habit. Mention any changes in his consumption budget that have been introduced by his contact with the city people or other causes.

At the end of each budget write your suggestions for improvement.

Budgets of Production.

A.—Statement of the Processes and Expenses of Production of _____ of _____ a farmer _____ of _____ district for _____ an acre

(Give here a short introduction)

Number of men in the family.....			aged years .....			..... months.....		
11	WOMEN	22 12	10	10	10	10	10	10
12	children	21 12	12	12	12	12	12	12

II (a) Time taken by each process.	II (b) Tools required by each process (including live stock) with No. of each tool.	III (a) Value of tools of each kind (in Rs. a. p.)	III (b) Length of life of each tool (in yrs. mths.)	III (c) Depreciation of all tools of each kind (in Rs. a. p.)	III (d) Expenses on repairs of each tool (in Rs. a. p.)	IV (a) Labour required in each process.	No. of men No. of days.	VI (b). Wages paid to outsiders (in Rs. a. p.)	VI (c) + Wages of himself and his family (in Rs. a. p.)	V (a) Debt incurred (in Rs. a. p.)	V (b) Period for which incurred (in yrs. months.)	V (c) Rate of interest. Per cent per annum	X (d) Total interest paid for the period of production (in Rs. a. p.)	IV (a) List and quantity of Raw materials (including manures, etc.)	Raw materials. Quantity.	IV (b) Their cost per unit (mention the unit) (in Rs. a. p.)	IV (c) Their total cost (in Rs. a. p.)
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(a)	(i)	
(b)	(ii)	
(c)	(iii)	
(d)	etc.	
Total		

Year from 19 to 19
 Months

V (a) Place where purchased.	V (b) Cost of their transportation (in Rs. a. p.)	IX (a) Quantity of land used (for each crop or purpose. Bighas—acres.	IX (b) Nature of tenancy. Its rent (per bigha or acre and total rent.) Rent per unit (in Rs. a. p.) Total rent (in Rs. a. p.)	VII (a) and XI. List and quantity of finished products, (principal and bye products with their uses.) List. Quantity.	VII (b) and XI. Their selling prices per unit (in Rs. a. p.)	VII (c) Their total value (in Rs. a. p.)	VII (d) Quantity actually sold.	VII (e) Its price (in Rs. a. p.)	VII (f) Quantity reserved for future use.	VII (g) Its value (in Rs. a. p.)	VIII (a) Place where sold.	VIII (b) Cost of marketing (in Rs. a. p.)	XII. Industrial Risks (Gains or losses due to variations in quantity or quality of products caused by weather, theft, breakage, etc.) (in Rs. a. p.)	XIII. Commercial Risks (Gains or losses due to changes of prices of materials and of products) (in Rs. a. p.)	XIV. Net income (For calculation of income please see pages 4) (in Rs. a. p.)	Remarks.	

[illegible]

CALCULATION OF INCOME FROM THE WORK INVESTIGATED

(32)

Receipts,	Rs. a. p.	Disbursement.	Rs. a. p.
By value of (a) principal products	...	To Raw materials	...
" (b) "	...	" Repair and depreciation of tools	...
" (c) "	...	" Wages paid to outsiders	...
" (d) "	...	" Interest paid	...
" (e) "	...	" Rent paid	...
" (f) bye-products	...	" Cost of transportation	...
" (g) "	...	" Cost of marketing	...
" By gains (Industrial) †	...	" Cost due to bye-products	...
" By gains (Commercial) ‡	...	" Losses or other subtractions ‡	...
		" Taxes, octroi, etc.,	...
		" Miscellaneous costs	...
		" Net income (obtained by subtracting the total expenditure on all items given above from the gross-income)	...
Total (Gross-income)	...	Total	..

† Risks (gains and losses) are to be taken into consideration only when (1) there is a difference between the estimated and actual yield or value of the finished products and (2) the gross income is calculated on the basis of the estimated, not actual yield or value, otherwise these risks should only be noted on page 3, but they must not be allowed to varyiate the calculations on this page.

[N. B.—The two totals should always be equal.]

(a) Expenses.	(b) Percentage of total.	(c) Remarks and Con- clusions. Quan- tity, rates, etc.
Rs. a. p.		
9. Losses or other subtractions, after taking account of gains from the same causes
10. Taxes, octroi, etc.
11. Any other miscellaneous costs
12. Income as calculated above (with a detailed analysis ϕ to be given in the Remarks column)
Total

N.B.— ϕ Break up this into its component parts—wages, interest, rent and profits. Income from other sources to be noted separately at the foot of this page.

The wages of labour of the artisan or farmer himself or of his family, the interest on their own capital (fixed and circulating) and the value of the time they spend in carrying or marketing are not to be included in their under item 12 above. However, these should be noted under remarks column.

INSTRUCTIONS FOR PREPARING DIAGRAMS WITH TWO MODEL DIAGRAMS

Prepare four diagrams illustrating the Production and Consumption budgets of the farmer and the artisan.

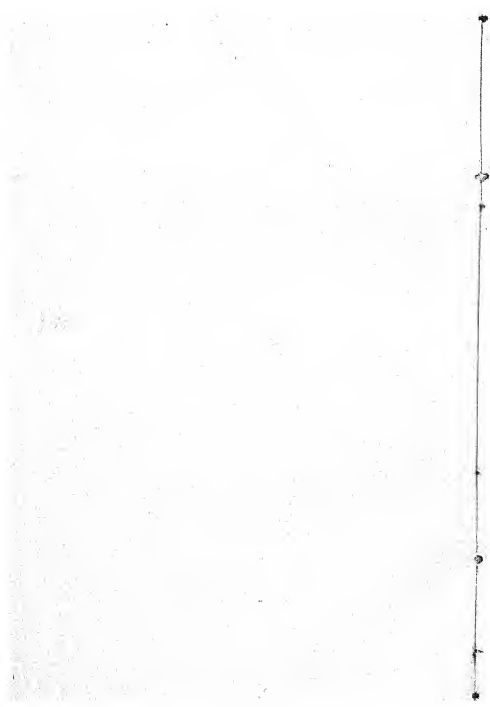
The diagrams should be rectangles all of the same height, say 10 inches, so that the same vertical distance represents the same percentage in all. Only the bases of the rectangles should differ.

The bases of the rectangles should be proportional to the total expenditure, *e.g.*, one inch for every Rs. 100. They should be horizontally divided into sections showing the expenditure on different heads. The percentages spent on each head will thus be shown by the height of each section of the rectangles. Use squared or graph paper ruled into tenths of an inch. Let the two diagrams representing expenses of production be drawn on one sheet if possible. The same expenditure should be coloured or hatched with the same colouring or hatching and the expenditure should be given in the same order from bottom to top in both charts.

All expenditure on food should be grouped together. Period of production or consumption should be given. The charts should have headings, and the vertical scale for reading percentages and the horizontal scale indicating the number of rupees represented by the base.

The expenses of production and consumption should relate to the same farmer or artisan, and to the same period of time. Make a comparative study of the expenses of production and consumption of the farmer with those of the artisan on separate sheets of paper.

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QUESTIONNAIRE FOR VILLAGE STUDY.

General

1. Name of the village.
2. Pargana in which situated.
3. Tahsil " " "
4. District " " "
5. Police station.
6. Post office.
7. Railway station.
8. School, under what auspices?
9. Nearest Hospital.

Physical Description of the Village

1. Area.
2. Nearness to the river.
3. Roads—Kachcha or Pakka.
4. Hills or mountains.
5. Streams (a) Perennial.
(b) Seasonal.
6. Forest.
7. No. and size of gardens.
8. No. of trees.
(a) Fruit-bearing.
(b) Non-fruit-bearing.
9. Tanks—or depressions for storing water.
10. Length of time for which the water lasts.

11. No. of wells—

(a) Kacha.

(b) Pakka.

(c) No. of wells used for drinking purposes.

(d) No. of wells used for irrigation purposes.

Soil

1. Give in detail the description of the soil.
2. How many kinds of soil are to be found in the village.

Classify them according to the following :—

- (i) Alluvial (ii) Sandy loam (iii) Sandy
(iv) (v)

3. What is the condition of the soil near the village?
4. Is it more or less productive than the soil lying at a distance of a quarter-mile from the village? Why?
5. Do rents vary in the village according to the fertility of the different fields?

Village Officials

1. No. of Lambardars.
2. No. of Mukhias.
3. No. of Patwaris.
4. No. of Chowkidars.
5. What are the functions of the village officials?
6. Is there a Panchayat?
7. What are the duties of the Panchayat?

Population

1. Statistics of the last census.
2. Distribution by sex :—
 - (a) Males.
 - (b) Females.
3. Distribution by caste :—

(a)	(e)
(b)	(f)
(c)	(g)
(d)	(h)
4. Distribution by religion :—

(a)	(c)
(b)	(d)
5. Mortality from Epidemics :—

(Plague, cholera, influenza, small-pox, malarial fever or any other serious epidemics.)
6. Is mortality greater (a) between certain ages, or (b) in one sex as compared with the other?
7. Marriage :—
 - (a) Age of marriage for boys?
 - (b) " " " " for girls?

Are there any marked variations from these averages?
8. The No. of (a) persons, (b) families, dependent upon agriculture for their livelihood.
 - (a) (i) Wholly dependent upon agriculture.
 - (ii) Partly " " "

- (b) (i) Zamindars (non-cultivating owners).
 - (ii) Landowners who cultivate themselves.
 - (iii) Tenants.
 - (iv) Labourers.
 - (v) Any other class of people living in the village.
9. The No. of persons or families whose chief means of livelihood is cottage industry.
 10. No. of beggars? Are they living only on charity?
 11. No. of (a) artisans (b) families of artisans, living in the village.
 12. No. of (a) field-labourers.
(b) families represented in (a).
 13. No. of persons or families whose principal means of livelihood is agriculture, but who depend on other industries as well (*e.g.*, carpet-weaving in Mirzapore), or on grass or wood-selling, *chhakra* hire, service of the zamindar, etc., to supplement their income.
 14. No. of persons or families whose principal occupation is other than agriculture, but who pursue agriculture as a subsidiary calling.
 15. No. of persons who live outside the village for a large part of the year :—
 - (a) Students.
 - (b) Military servants.
 - (c) Teachers.

(d) Pleaders.

(e) Civil servants.

(f) Persons who work in cities as menial servants.

(g) Pensioners.

16. No. of shop-keepers or traders.
17. What does the cultivator do when he has no work in connection with the farm?
18. What does the cultivator do in the slack season?
 - (a) When agricultural conditions are normal.
 - (b) When they are abnormal.
 - (c) Does he follow any subsidiary industry?

Beggars and Fakirs

1. How many beggars live in the village?
2. How much, do you estimate, is given to them annually in the village? Is the number of beggars in the village increasing or decreasing?

Artisans

1. How are artisans paid?
 - (a) In cash?
 - (b) In kind?
2. Are they paid daily, weekly, monthly, half-yearly, or annually?
3. What is the general rate at which they are paid?

4. Are they entitled to certain customary benefits at social or religious ceremonies?
5. Are there any other special rights or privileges enjoyed by the artisans in the village? Mention them.

Labourers

1. The No. of general and agricultural labourers (*mazdur*).
2. How are they paid? Cash or kind?
3. Rate at which paid?
4. Are they paid daily, monthly, six-monthly, or annually?
5. Are they paid anything at marriage or other social or religious ceremonies?
6. What is the economic position of a field-labourer in the village organization? Describe his rights and privileges in the village.
7. Is there a tendency among the villagers to emigrate?
8. What class or classes of people migrate more? Of what age generally?
9. Has there been any emigration in the last ten years? Has it been temporary or permanent?

Houses and Housing Conditions

1. No. of houses :—

(i) Pukka.

(ii) Kachcha.

2. Are the houses in the village very closely built together?
3. Are they well ventilated?
4. How far apart are the houses or group of houses situated?
5. What is the sanitary condition of the village?
6. Where is the manure generally stored, near the houses or at a distance from them?
7. Are there any houses recently built? What is the tendency in regard to ventilation?

Land

1. Total area of land belonging to the village :—
 - (a) Cultivated.
 - (b) Uncultivated.
 - (c) Cultivable.
 - (d) Non-cultivable.
 - (e) Irrigable.
 - (f) Non-irrigable.
 - (g) Ek-fasali.
 - (h) Do-fasali.
2. What is the condition of holdings :—
 - (a) Are they consolidated?
 - (b) Are they scattered?
3. What is the average size of a field?

Cultivated
Uncultivated

4. What is the number of :—
 - (i) Occupancy tenants ?
 - (ii) Non-occupancy tenants, owners ?
 - (iii) Sub-tenants under tenants at-will :—
 - (a) Who own no land at all ?
 - (b) Who own no land in the village ?

Irrigation

1. Is irrigation carried on from wells ?
2. What is the system followed for working the wells ?
3. Are they used throughout the year or only for a short time for particular crops ? Name such crops.
4. How long does it take to irrigate a field which is one bigha in size by the method of irrigation generally prevalent in the village ?
5. Is there any canal ?
6. How many times during the year is water given from the canal ? Is it given for both the crops *rabi* and *kharif* or only for one ?
7. Are there any streams ?
8. Are these streams used for irrigating fields ?

Rent

1. Do the cultivators pay rent ?
2. What is the average rate ?
3. Is it fixed or does it vary with the different crops ?

4. Are the rents high or low, considering the net income of the cultivators ?
5. Do the zamindars encourage improvements on the soil ?
6. Do the cultivators use any system of rotation of crops ?
7. Do they use manures ?
8. Where do they get the manures ?
9. (a) Are goats generally used for manuring the fields ?
(b) What is the general rate of payment for such manuring ?
10. Do the cultivators buy manure ?

Crops

1. What crops are generally grown ?
2. Divide them into Kharif and Rabi.

Note—Kharif crops :—(Rice, Jwara, Bajra, Maize, Til, Sugarcane, Pepper, Cotton, Indigo, Fruits, Vegetables.)

Rabi crops :—(Wheat, Barley, Grams, Peas, Tobacco, Fruits, Vegetables, Fodder, etc.)

3. How many ploughings are generally given to each of the chief crops, and when are they given ? Does this vary on different classes of soil ?
4. Is weeding regularly done ? If so, for what crops ?

5. Do farmers use improved implements? If not, why not? If so, from where do they buy them?
6. Is there any agricultural demonstration farm in the vicinity of the village under study? If so, do the villagers purchase seeds from there?
7. What is the average field of the chief crops in the village?
8. Is there any cultivator who cultivates the soil on a commercial basis?

Indebtedness

1. What are the chief objects for which loans are taken?
 - (a) Personal necessities such as food and clothing.
 - (b) Ceremonies such as marriages and funerals, etc.
 - (c) Litigation.
 - (d) Professional expenditure :—
 - (i) Fixed items :
Land revenue, rent, etc.
 - (ii) Advancement, such as land improvements, cattle, new implements, etc.
2. Is *taccavi* popular among the cultivators?
3. How many money-lenders are in the village?
4. What is the general rate of interest they charge? Does it vary according to the

urgency of the need of the borrowing cultivator, or is the same rate charged from every borrower?

5. Do the cultivators and others residing in the village consider the money-lender their friend?
6. Is there a co-operative society in the village?
How many of the villagers are members?
7. What do they think of these societies?

Market and transportation

1. How far is the nearest market from the village?
2. Is produce carried to market by:—
 - (i) Carts?
 - (ii) Railways?
 - (iii) Pack animals, such as donkeys, camels, bullocks, etc.?
3. Do the *kunjras* (middlemen) come to the village to purchase the produce? Or do the villagers take it to the market themselves?
4. How much per load do they pay to the cartmen or to the owners of donkeys or bullocks?

Suggestions

1. Have you any concrete suggestions for the improvement of conditions in the village investigated?

MODEL ESSAYS

(1) Economic Survey of Bannahia Mirgunj

At the present time the lowest unit of administration in India is the village. The village about which I am going to write, namely, Bannahia Mirgunj, is situated in the pargana of Sivauli, tehsil Bareilly. There is a police station as well as a post office in the village. The railway station Nagaria Sadat, E. I. R., is about a mile from the village. There are two schools, one a Primary and the other Vernacular Middle. Both the schools are run under the auspices of the District Board. The nearest hospital from the village is at Milak, a place about seven or eight miles from the village.

The area of the village is six hundred and five acres. Close to the village there are three rivers. The river Pilakhar lies at a distance of three miles, the river Siddia at four miles, and Ramganga at six miles. There is a pukka road to the north of the village running from Bareilly to Moradabad. The road is under the P. W. D. There is a kachcha road also to the west of the village running from Mirgunj to Sivauli which is under the supervision of the District Board. There are no hills or mountains anywhere near the village. There are three streams flowing close by the village. Two of them, namely, Pilakhar and Ramganga, are perennial and the other one, named Siddia, is seasonal. There are no forests near the village. The number of gardens in the village is ten. Total area under the gardens is 15 acres. There are seven hundred and forty trees in the

village ; of them 532 are fruit-bearing and 208 non-fruit-bearing. There are nine tanks in the village. In about three of them water lasts throughout the year, and in the rest just during the rainy and a part of the winter season. The number of kachcha wells is 21, and the number of pukka wells is eight. Thirteen wells are used for drinking purposes, of which five are kachcha, and the rest pukka. Sixteen wells are used for purposes of irrigation.

The kinds of soil in the village are Gohani, Domat Awwal, Domat Doyun and Matiyar Awwal. The produce in the soil near the village is of an average degree. There is not much difference between the soil near the village and that at a distance. Whatever little difference is visible, is due to the nightsoil being available as manure in the fields surrounding the village.

The rents of the land differ according to the fertility of the soil.

The Officials of the village are the Darbardan, the Mukhia, the Patwari and the Chowkidar. There are two Darbardans, one Mukhia, one Patwari and one Chowkidar in the village. The work of the Darbardan is to collect the revenue from the petty landholders and to maintain order in the village. Mukhia is the village Headman. The work of the Patwari is to keep the records of the village fields and its owners giving every necessary detail of the rent payable by each cultivator and zemindar. Khasra and Khatauni are the names of some of his important registers. The work of the Chowkidar is to guard the village at night

with an additional duty of reporting crimes and observing the movements of suspicious characters.

There is no Panchayat in the village.

The population of the village at the last census was between 900 and 1000. The number of males in the village is about 547 and that of females about 441. The principal castes in the village are Sheikhs, Barhais, Juláhas, Lohárs, Brahmans and Kurmis. Exact number of each caste could not be ascertained, but the Kurmis are the largest in number. There are about 679 Hindus and about 200 Mohammedans in the village.

Last year the village was affected by plague in the months of February and March, 1928, which took away nearly 50 lives. Influenza did not visit the place this year. Malaria was rampant during the last rainy weather but is not known to have taken away any life. Small-pox among children was only on a small scale. Exact number of deaths from this epidemic could not be ascertained.

The age of marriage for boys in the village varies according to the caste. The age of marriage among Sheikhs is about 23 or 25, among Barhais about 14 or 15, among Brahmans 16 or 18, and among Kurmis 5 and 6 years. The age of marriage for girls among Sheikhs is about 19 or 20, among Barhais 11 or 12, among Brahmans 13 or 14, among Kurmis 5 or 6 and sometimes 10 or 11. It might be noted that among the Kurmis it so happens that sometimes the bride is older than the bridegroom. The number of persons in the village

wholly or partly dependent upon agriculture is 850. The number of those wholly dependent upon agriculture is 675 ; and of those depending partly is 175. About 100 persons in the village live upon cottage industries. There are no beggars in the village.

The number of artisans is 12, of field labourers 100. The number of families whose members work on the fields is 12. There are twelve men in the service of the zemindar. They only remain in service during the slack season. There are four persons who remain out of the village for a large part of the year. Three are in railway service and one is serving in the Allied Wood Crafts at Chitterbuckganj. There are sixteen shopkeepers and seven traders in the village.

When any cultivator of the village has no work in connection with the farm, he sits idle wasting his time in *shauq* and *tamasha*.

The artisans of the village are paid in cash at other times during the year except the harvest season when they are paid in kind.

There are 100 mazdurs in the village. They are paid daily in cash, their wages being 3 annas to 6 annas a day. They get as gift a topi, a kurta and a jhāran on the occasion of marriages besides usual dinners.

The villagers generally do not emigrate.

There are 11 pukka and 177 kuchcha houses in the village. The houses are very closely built together. They have no idea of ventilation. Even the pukka

houses are at times suffocating. The usual distance between the groups of houses is the width of the lane or street ranging from 3 to 5 yards. The condition of the village is most insanitary. Manure is generally stored in the open near the chaupal where cattle are kept. A few members of the co-operative society however store their manure in pits near their fields. There are no newly-built houses in the village.

The area of cultivated land in the village is 538 acres, of uncultivated 67 acres, of cultivable 580 acres, of non-cultivable 540 acres. There is no Ek-Fasali land in the village, and the area of Do-Fasali is 538 acres.

The holdings of the villagers are scattered. The average size of a field is 1 acre. The number of occupancy and non-occupancy tenants in the village is 134, that of sub-tenants 28.

In the village irrigation is partly carried on by wells. Indigenous methods are followed in working the wells. The crops irrigated by wells are wheat, barley, gram and arhar. A field of one bigha in size takes full two days by the method of irrigation generally prevalent in the village. They generally irrigate their fields for ten hours a day. The system of irrigation used is "mot."

There is no canal in the village. The cultivators pay rent for their fields. The average rate of rent for occupancy tenants is Rs. 1/4 per Kham bigha and that of Khudkasht is Rs. 3/-/- per Kham bigha. The

rent is fixed and does not vary according to the crops. The cultivator does not consider the rate of rent to be high. He is satisfied with the rate of rent charged.

The zemindar, on his part, cares little for the improvement of the soil. The cultivators of the village use the system of rotation of crops. They also use manures. Their *Kura Karkat* (refuse and sweepings) and part of the cow-dung (which cannot be used for fuel during rains) is used as manure. No goats are used for manuring the fields. They do not generally buy manures.

The Kharif crops of the village are sugarcane, maize, juar, paddy; and the Rabi crops are wheat, barley, gram, masur, arhar, alsi and sarson. Weeding is regularly done to wheat, alsi, sarson and gram crops. Those farmers who are members of a co-operative society use Meston ploughs. They purchase them from some English firm through the Inspector, Co-operative Societies. There is no demonstration farm in the village. No cultivator in the village cultivates the soil on a commercial basis. The chief objects for which loans are generally taken are marriages, litigation, purchase of bullocks and seed, payment of rent and in a few cases for purposes of consumption.

Taccavi has to be taken during times of famine, but they do not feel happy about taking the *taccavi* loan. The number of ordinary money-lenders in the village is 16. They are generally those

whose chief occupation is shop-keeping. They generally charge 2 pice per rupee per month which works out $37\frac{1}{2}\%$ per annum. In cases which they consider more reliable they reduce it to 25% (*Sal Sawaya* as they call it). The same rate of interest is not charged from every borrower. The borrowers who need money urgently have generally to acknowledge receipt of something more than what they borrow actually. They consider the money-lender to be their friend at the time of borrowing but at the time of repayment he is their greatest enemy. There is a co-operative society in the village. Nineteen villagers are members of the society. The society is popular among the members.

There are four market days for this village, *viz.*, Monday, Thursday, Friday and Saturday. The produce of the village is carried to the markets at Bareilly and Milak by railway and carts. Middlemen or kunjras come during the fasal for purchase of the produce. There are very few villagers who take their produce to the market themselves. The bullock carts are generally their own but if they have to engage on hire, they have to pay a varying rate. Payment may be in cash or kind.

I have to make two important suggestions for the improvement of conditions in the village investigated. The first is the adoption of means for increasing the productive capacity of the average cultivator and the second of inculcating in the villager the habit of keeping himself and his surroundings clean.

For increasing his productive capacity, the cultivator must take resort to improved methods of cultivation and irrigation. As things at present stand he generally follows the line adopted by his forefathers ages ago. Under the heading of cultivation the points which need a mention are seed, manure and the implements used. The cultivators should try to obtain the best variety of seed in order to get a better yield. The manure at present given to the fields is not only poor in quality but insufficient in quantity. They should no more use cow-dung as fuel. All the cow-dung available must be applied to fields in the form of manure. The improved types of implements which can be of best use to the cultivator are Meston ploughs and Lever Harrows.

At present they seldom irrigate their fields. Few of them that think of irrigation only dig kachcha wells and irrigate their fields with a small earthen pot which does not hold more than ten seers of water at a time. The best means of irrigation, cheap and more profitable is the use of persian wheels. They should jointly dig pucca wells all even distance from their fields and erect persian wheels (*rahats* as they call them).

At present the villager has absolutely no idea of what cleanliness is. He is dirty, his children are dirty, his clothes are dirty, his house is dirty, his cattle are no better, and everything connected with him is unclean and consequently unhealthy.

My suggestions for improving the sanitation of the village are (1) that family pits be constructed for

storing manure, and for use as latrines, (ii) that they must wash their clothes once a week, (iii) they must cover their food and protect them from flies, (iv) they must not use water of tanks for drinking purposes, (v) they must have windows in their houses, (vi) they must not keep cattle quite close to their living place. All the rubbish and cow-dung must be kept covered in pits near their fields (to be used as manures).

Among other reforms in the life of the village may be mentioned the prevention of waste and extravagance on the occasion of marriages and festivals, and profitable utilisation of the time when there is less work on the fields.

Crop Production in India

A survey of the principal crops in India shows that India leads the world in the production of certain commodities, and makes herself sufficient in respect of its food-supply and large variety of raw materials. The production of the food crops is very large, which account for 81·2% of the total sown area, while non-food crops account for 18·8%. The general tendency nowadays is to increase the area under non-food crops, which is due to the high world-prices. This tendency is to be found only in those tracts where commercial farming is appreciated. In the backward tracts the farmers produce just enough to meet their barest necessities.

✓ *Rice.*—Rice is the leading crop of India, as it is the staple food of most of the people of the

country. It occupies nearly 35% of the total cultivated area. Total area under this crop in 1925-26 was 83·7 million acres, yielding 612·60 million maunds. India is the largest exporter of rice in the world, though her average export has never exceeded 7% of her total production. Rice is generally grown in those tracts where the rainfall is heavy, and the climate is hot and moist. It would be interesting to note the area under cultivation in different provinces :—

Bengal	21·13	million acres.
Bihar & Orissa	14·28	" "
Burma	12·21	" "
Madras	11·32	" "
United Provinces	7·18	" "
Central Provinces	5·08	" "
Assam	4·58	" "
Bombay	3·87	" "

The above figures will show that rice is chiefly grown in these provinces because here the physical conditions are very favourable for its growth. Rice is the staple crop of the eastern provinces. Burma produces the largest quantity of rice, and because of its being thinly populated it has got a lot to spare. Burma rice makes good deficiencies in other parts of the country. India exported 24·8 lakhs tons of rice worth 39·39 crores of rupees in 1925-26. The Agricultural department has thus far paid no attention to this crop, and consequently no great progress has been made. The methods of cultivation are primitive and antique.

✓ *Wheat*.—Wheat is the next important crop grown in India. It stands next to rice in the matter of acreage. It occupies 10% of the total cultivated area. Wheat is a rabi crop, and is sown from October to December, and harvested from March to May, the time of sowing and reaping varying with the variations in the climatic conditions in the different parts of the country. It is the staple food of the people in the Punjab, United Provinces, and N.-W. F. Provinces.

The chief wheat-producing provinces in India are the following:—

Punjab	10'68	million acres.
United Provinces	6'99	" "
Central "		
& Berar	3'63	" "
Central India States	1'85	" "
Bombay	1'74	" "
Bihar and Orissa	1'16	" "

As regards production India occupies a third place in the world. Since the war the area under wheat has increased, and some people are of the opinion that India would soon approach the second position. The export of wheat fluctuates according to the nature of seasons. In normal years about 10% is exported from India. In 1924-25 11'11 lakhs tons of wheat were exported valued at Rs. 17'19 crores. In 1926-27, the figures were 17'76 lakhs tons and Rs. 27'1 crores. The quality of wheat has greatly been improved. Formerly it had a reputation of being dirty and worthless.

Improvements in the means of irrigation has given a considerable impetus to this crop. The activities of the Agricultural department have helped a good deal in improving the varieties of wheat sown in India. The introduction of Pusa 12 has improved the quality of the grain considerably. As compared to other countries the average yield of wheat in India is very low. Average yield per acre in England is very high, whereas the aggregate production in comparison to hers is very low.

✓ *Barley*.—Barley is chiefly grown in the United Provinces of Agra & Oudh. Total area under this crop in 1925-26 was 4.11 million acres. A very small quantity of barley is exported to foreign countries. Value of barley exported in 1926-27, was 62 lakhs of rupees.

✓ *Jawar and Bajra*.—The main varieties of Indian millets are Jawar and Bajra. They constitute an important part of the staple food of the masses of Madras, Bombay and the adjoining districts of Hyderabad, and some parts of the United Provinces.

Total area under Bajra and Jawar in 1925-26 was 29.59 million acres and 12.25 million acres respectively. Jawar is grown in Hyderabad, Bombay, Madras, Punjab, United Provinces and Central Provinces.

✓ *Pulses*.—Pulses are largely grown in India and form an important part of the Indian dietry. They are chiefly grown in United Provinces, Punjab, Bombay,

Central Provinces and Bengal. Gram occupies the topmost place among pulses in India. In 1925-26, about 14·30 million acres were under it. In the United Provinces 6·64 million acres were sown. There is very great internal demand for pulses, hence very little is exported to other countries.

There are other food crops grown which include fruits, vegetables and spices. Total area under these crops was 7·75 million acres in 1925-26. Chief fruits grown in India are mangoes, oranges, apples, etc., and vegetables such as potatoes, cabbages, coulflovers, brinjals, onions, turnips, tomatoes, reddishes, etc. Fruit-gardening has not received much attention from the people. Indifference to this industry is attributable to the ignorance of the people in regard to the methods of fruit-growing, and also to the lack of demand in India, because of the poverty of the masses. Spices are chiefly grown in the South. Certain varieties of spices are grown all over India.

✓ *Sugar.*—India was probably the original home of sugarcane, and the area under it was probably the largest of any other country in the world but the average yield per acre is very low. India does not even produce enough for internal use. In 1926-27 India imported 9·24 lakh tons of sugar valued at over 19·16 crores of rupees.

The chief cane-growing provinces of India are:—

United Provinces	1·43	million acres.
Punjab	·39	" "

Bihar & Orissa	29	million acres.
Madras	11	„ „
Bombay	083	„ „
Assam	041	„ „

Government have taken up the question and sugar-cane has since 1901-02 been subjected to a systematic study with a view to improve its quality and the supply of canes, and recently a cane-breeding station has been started at Coimbatore in Madras. The Government of India appointed a Sugar Committee in 1919 to investigate the possibility of organizing and developing the sugar industry in India. The committee published their report in 1921, which recommends the organization of the sugar industry on the Java model. It was suggested to establish an Imperial Research Institute, with three divisions, Agricultural, Chemical, and Engineering to control the work of the Research Institutes in the provinces. A Sugar Board was also to be appointed. The Board appointed would guide the Research Institute, and advise Government on all matters regarding the sugar industry. It should be noted that the masses in India use Molasses or Gur, and, therefore, special attention has to be paid to Gur-making industry. Some improvement has been made along the line of cane-crushing. Iron cane-crushers have replaced the wooden cane-crushers.

Coffee.—At one time coffee industry in India was flourishing, but after 1862 its decline started. The cheaper Brazilian coffee has come into competition with the Indian coffee. This competition has affected

Indian industry adversely. In 1925-26 the area under coffee in the whole of India was 148'200 acres. It is chiefly grown in the Mysore State, Madras, Coorg, Cochin, Travancore and to a smaller extent in Burma and Bombay. Total quantity exported in 1925-26 was 150'000 cwt., valued at 1'32 crores of rupees.

Tea.—The only competitor of India in the production of tea is China. India had almost a monopoly of tea production before China tea came into prominence. Tea industry is prosperous and shows signs of future progress. Total area under tea in 1925-26 in British India was 728'857 acres and total yield was 363'5 millions of lbs. About $\frac{3}{4}$ th of her export of tea goes to United Kingdom. Tea is a very important commodity of export in India. In 1926-27, 349'26 millions of lbs. were exported. Consumption of tea in India is rapidly growing. Tea Association which has been formed for the promotion of this industry has proved very useful.

Oil Seeds.—India produces a large variety of oil seeds such as linseed, sesamum, rape and mustard, groundnut, cocoanut, castor, mowa, cotton-seed, niger, coriander, etc. Total area under these is 15'15 million acres in British India. Oil Seeds are exported in a large quantity. In 1926-27, 838'000 tons valued at 1'908 crores of rupees were exported. On the whole, oil seeds form a very large portion of India's export.

Fibres.—These form an important part of the crop sown in India. Nearly 8'5% of the total area sown is under these crops.

Cotton.— Cotton is the foremost fibre crop in India. In the production of cotton India occupies a second place, first being the U.S.A. Some people are of the opinion that within the next decade or two India will produce more cotton than the U.S.A. If this comes true then India will lead the world. Total area under cultivation in British India, in 1925-26, was 18.18 million acres, and if the area under this crop in the Indian States was also included, then the total area sown would be 28.49 millions. The yield of the crop in the same year amounted to 6.50 million bales of 400 lbs. each. Nearly 50% of the total produce is exported to other countries. From the time of the war the production of cotton has steadily increased, and with it the exports as well. Total quantity exported in 1925-26 was 7.4 lakhs of tons valued at 95 crores of rupees.

The principal cotton-growing provinces in India being :—

	1925-26.
Bombay	8.11 million acres.
Central Provinces & Berar	5.48 " "
Hyderabad	3.78 " "
Punjab	3.05 " "
United provinces	1. " "
Madras	2.92 " "

The fibre of the Indian cotton is inferior to that of the American and Egyptian. England is not the chief importer of this commodity. Indian cotton is chiefly exported to Japan and the continent. The Government

is trying to improve the quality of the cotton produce, by introducing improved varieties from other countries.

" The Government appointed the Indian Cotton Committee in September, 1917, to examine the possibilities of increasing the supply of long staple cotton in India, to suggest improvements in the existing methods of sowing and marketing, to make recommendations in regard to the prevention of adulteration, damping and mixing, etc." Since the time of the submission of the report of the Indian Cotton Committee many improvements have taken place, and it is expected that soon India will be able to produce the variety of fibre that would meet the demand of Lancashire cotton.

Jute.—Jute is also one of the most important fibres. India enjoys a monopoly in the production of jute. It is generally cultivated in the provinces of Bengal, Assam, and the Indian States of Cooch Behar & Orissa. The soil of these tracts is eminently suited to the growth of this crop. It needs an alluvial soil and plenty of rainfall. This crop is very depleting and the rivers every year bring fine alluvium and deposit on the soil. This recuperates the soil every year. In 1925-26 total area under this crop was 3,115,000 acres, Bengal alone contributing 83% of the total sown area. In 1926-27, 70·8 lakh tons of raw jute valued at Rs. 26·78 crores, and jute manufactures valued at Rs. 26·78 crores were exported. Germany imports the largest quantity and United Kingdom comes the next. The jute industry has shown remarkable progress. The jute manufactures have increased considerably.

Other crops grown are indigo, opium and tobacco. At one time indigo constituted one of the most important products of India. But this industry has suffered because of the advent of the chemical dyes into market. The area under the cultivation of indigo has steadily decreased. In 1925-26, 2,000 cwts. of indigo valued at 4'24 lakhs of rupees was exported. An Indigo Research Chemist has been appointed by the Government of India with a view to assist this industry. The chief customers of the Indian indigo are China and Japan.

Opium.—There has been a tremendous decline in this industry, especially since the time of signing an agreement with China in 1907. Area under the cultivation of opium was 83,030 acres in 1925-26.

Tobacco.—There are three chief centres of the tobacco industry, i.e., Eastern and Northern Bengal, Southern India and Lower Burma. In 1925-26, the total area under tobacco was 1,964,862 acres. 38 million lbs. of tobacco valued at 111'40 lakhs of rupees were exported. Amount of manufactured tobacco is far in excess of the exports which is probably due to an increased use of cigarettes. Experiments are being made at the Research Institute at Pusa to improve the quality of the Indian tobacco.

✓ *Fodder Crops.*—The area under the fodder crops, of late increased because of the special attention that has been given to improving the state of the Indian cattle. In 1925-26, 8'93 millions of acres were under the fodder crops. The Agricultural Department is trying

to introduce better varieties and the cultivation of beesum at Pusa may be regarded as a great success.

The figures given below will show the present position of crop production in India.

	1901-2 Acres (millions.)	Percentage of net area by profes- sional survey.	1925-26 Acres (millions.)	Percentage of net area by profes- sional survey.
Net area by professional survey ...	550'81	...	667'61	...
Area under forest ...	66'86	12'0	86'98	13'2
Not available for cultivation ...	135'35	34'6	150'19	22'5
Cultivable waste other than fallow ...	107'52	19'5	151'87	22'7
Fallow land ...	42'14	7'5	49'30	7'5
Net area sown with crops ...	199'71	36'1	225'84	33'8
Total area (includes area sown more than once)	220'35	...	256'99	...
Area irrigated ...	32'61	...	47'56	...

	Area under food grains 1901-2	Percentage of total area sown.	1925-26 Acres (millions.)	Percentage of total area sown.
Rice ...	70'06	...	80'17	...
Wheat ...	18'60	...	23'97	...
Barley ...	6'21	...	6'61	...
Jawar ...	21'81	...	20'61	...
Bajra ...	13'19	...	13'26	...

	Area under food grains. 1901-2	Percentage of total sown area.	1925-26 Acres (millions.)	Percentage of totalsown area.
Ragi ...	3.75	...	3.88	...
Maize ...	6.19	...	5.50	...
Gram ...	9.78	...	14.32	...
Other grains and pulses...	27.35	...	28.71	...
Total food grains ..	176.99	80.0	196.06	76.3
Area under other food crops (including vegetables, fruits, spices, etc.) ...	6.18	...	7.75	...
Area under Sugar ...	2.59	...	2.80	...
Coffee ...	.12	...	.09	...
Tea ...	.44	...	.72	...
Miscellaneous food crops ...	1.84	...	1.21	...
Total food crops ...	188.24	85.4	208.03	81.2
Area under oilseeds				
Linseed ...	2.26	...	2.52	...
Sesamum (oil) ...	3.75	...	3.40	...
Rape and mustard ...	2.87	...	13.08	...
Other oil seeds ...	3.07	...	.14	...
Ground nut ...	...	...	3.76	...
Cocoanut ...	...	...	.84	...
Castor ...	...	...	.57	...
Total oil seeds ...	11.96	5.4	15.15	5.9
Area under cotton ...	10.30	...	18.18	...

to introduce better varieties and the cultivation of beesum at Pusa may be regarded as a great success.

The figures given below will show the present position of crop production in India.

	1901-2 Acres (millions.)	Percentage of net area by profes- sional survey.	1925-26 Acres (millions.)	Percentage of net area by profes- sional survey.
Net area by professional survey ...	550'31	...	667'61	...
Area under forest ...	66'36	12'0	86'93	13'2
Not available for cultivation ...	135'35	24'6	150'19	22'5
Cultivable waste other than fallow ...	107'52	19'5	151'87	22'7
Fallow land ...	42'14	7'5	49'30	7'5
Net area sown with crops ...	199'71	36'1	225'84	33'8
Total area (includes area sown more than once)	220'35	...	256'90	...
Area irrigated ...	32'61	...	47'58	...

	Area under food grains 1901-2	Percentage of total area sown.	1925-26 Acres (millions.)	Percentage of total area sown.
Rice ...	70'06	...	80'17	...
Wheat ...	18'60	...	23'97	...
Barley ...	6'21	...	6'61	...
Jawar ...	21'81	...	20'61	...
Bajra ...	13'19	...	12'26	...

	Area under food grains. 1901-2	Percentage of total sown area.	1935-36 Acres (millions.)	Percentage of total sown area.
Ragi ...	3'75	...	3'88	...
Maize ...	6'19	...	5'50	...
Gram ...	9'78	...	14'82	...
Other grains and pulses...	27'35	...	28'71	...
Total food grains ..	176'99	80'0	196'06	76'8
Area under other food crops (including vegetables, fruits, spices, etc.) ...	6'18	...	7'75	...
Area under Sugar ...	2'59	...	2'80	...
Coffee ...	'12	...	'09	...
Tea ...	'44	...	'72	...
Miscellaneous food crops ...	1'84	...	1'21	...
Total food crops ...	188'24	85'4	208'66	81'2
Area under oilseeds				
Linseed ...	2'26	...	2'52	...
Sesamum (oil) ...	3'75	...	3'40	...
Rape and mustard ...	2'87	...	13'08	...
Other oil seeds ...	3'07	...	'14	...
Ground nut ...	...	...	3'76	...
Cocconut ...	...	...	'64	...
Castor ...	...	...	'57	...
Total oil seeds ...	11'96	5'4	15'15	5'9
Area under cotton ...	10'30	...	13'18	...

	Area under food grains, 1901-2	Percentage of total sown area.	1925-26 Acres (millions.)	Percentage of total sown area.
Jute ...	2'27	...	2'42	...
Other fibres ...	'56	...	'91	...
Total fibres ...	13'14	5.9	22'01	8'5
Indigo ...	'79	...	'13	...
Opium ...	'60	...	'08	...
Tobacco ...	'95	...	1.06	...
Fodder crops ...	2'94	...	8'93	...
Miscellaneous non- food crops ...	1'71	...	'98	...
Total non-food crops,	32'11	14.6	48'32	18.8
	220'55		256'99	...
Total sown area (in- cludes area sown more than once) ...	20'84	...	81'14	...

Estimated yield and area of principal crops (in-
cludes also crops in certain Indian States) 1925-26.

	1901-2 Yield (millions.)	1925-26 Yield (millions.)	1925-26 Area (millions of acres.)
Rice (long) ...	19'21	30'63	82'37
Wheat ...	6'09	8'70	30'47
Jawar ...	...	5'31	29'58
Bajra ...	...	1'98	12'25

	1901-2 Yield (millions.)	1925-26 Yield (millions.)	1925-26 Area (millions of acres.)
Gram ... ..	...	3'87	14'30
Raw Sugar (tons)	2'02	2'97	2'67
Tea (lbs)	191'20	363'50	'72
Cotton (Bales 400 lbs.)	3'56	6'25	28'49
Jute	7'43	8'94	3'11
Linseed (tons)	'35	'40	3'57
Rape and Mustard (tons)	'95	'91	5'60
Sesamum (tons)	'35	'42	4'07
Castor seed (tons) .. ..	...	'14	1'40
Ground nut (tons)	'06	1'99	3'97
Indigo (cwts.)	'11	'02	'13
Coffee (lbs.)	15'57	22'10	'14
Rubber „ ... ..	...	19'97	'13

Although so much of food grains, and other raw materials are produced in India, yet there is a scope for producing more from the same area under cultivation. Yield per acre in India is very low. Improvement in agriculture are of a vital importance for bettering the condition of the cultivator, and thus adding to the national wealth of the country. With the improved methods of cultivation the other countries have considerably raised their yield per acre of the different crops. The table below will show yield per acre in India and some other countries (1922).

		Wheat (Bushels 60 lbs.)	Corn (Bushels 56 lbs.)	Barley (Bu- shels 48 lbs.)	Rice (lbs.)	Cotton (lbs.)	Tobacco (lbs.)
Canada	...	17'8	43'4	27'6	...	..	...
U. S. A.	...	13'9	23'3	24'9	1,090	141'0	735'6
England	...	31'3	...	31'0	...	...	...
Denmark	...	39'0	...	45'6	...	...	...
France	...	18'6	16'0	23'9	...	...	1,426'1
Italy	...	14'1	20'2	14'3	2,151	...	917'9
Germany	...	20'5	...	25'7	...	...	2,630'2 (1921)
Egypt	...	24'1	36'3	30'1	1,456 (1921)	299'0 352'0 (1923-24)	...
India	...	13'0	15'6	19'8	911	98'0	...
Japan	...	22'5	27'7 (1921)	31'7	2,477	...	...
Australia	...	11'2	25'7	21'3 (1921)	...	...	...

THE APPLICATION OF MALTHUSIAN DOCTRINE IN INDIA.

The production of wealth in a country is so directly connected with the number and quality of the people in it that the problem of population has been one of major importance from times immemorial. This number is entirely dependent upon food, clothing and shelter that a country can supply. Invariably and

eventually, however, there is a limit to this; so that the population cannot go on multiplying to infinity. If it did increase beyond a certain point it would at once be overpowered by the checks of nature. Man has been conscious of this fact from the very earliest times. The attention of the state and the individual has therefore always been directed towards this all important subject. The law-givers in every age made a special mention of it in their mandates.

It is but natural to find, therefore, that the earliest savage, as he stood beside the shot-down-deer, knew that it would suffice only for a definite number of people and that he could not hope to shoot more during the period specified. If, therefore, that number was exceeded the result would be starvation. He sought to check any increase above that by means of abortion and infanticide, while on the other hand a need for the defence against the enemy helped the augmentation of numbers.

The principles affecting the check or growth of population have been the same—the means adopted towards its regulation may vary from community to community and from one stage of civilization to another.

We find that the Greeks and Spartans had an 'Ideal City State' before them. The population was therefore regulated so as to be compatible with that ideal. Any increase was got rid of by means of emigration, while growth was encouraged by rewards to

prolific parents and indignities to bachelors or the childless. The Romans who were a conquering race encouraged population, while there was a determined reaction against their immorality, love of luxury, and profligacy in the early Christian ages. Virginity and chastity were praised and life-long abstinence from marriage and sexual relationship were the gifts of a saint. Martin Luther was, however, in favour of marriage and progeny, but he enjoined upon the people to "make arrangements betimes, and get some works remembering always to remain upright and serious."

But the conditions under which nations have had to labour have been of so dynamic a character that it has practically been rendered possible for the people to hold widely divergent theories on population. Not infrequently have the writers also been in the habit of overstating facts about population. But now that the gigantic war is over and since there seems to be no likelihood of production ever accelerating its pace, as it did, when the Industrial Revolution began, we are in a better mood to receive Malthus with his essay on the Principles of Population and Ricardo with his Law of Diminishing Returns.

The sum total of their teaching is briefly this :— Malthus maintained that population tends to increase in a Geometric Progression, *i.e.*, as 1, 2, 4, 8 ; all other things remaining the same, while the means of subsistence increased only in Arithmetic Progression, *i.e.*, as 1, 2, 3, 4, 5.

The population was in early times thus necessarily kept down at a level with the means of subsistence by the checks of nature such as starvation, disease, deaths, wars and epidemics. But man possesses reason and should do all to prevent starvation and misery. Malthus therefore said that it was not the duty of parents to bring children into the world whom they could not educate to the same standard to which they were themselves educated. Hence he advocated preventive checks which are all resolvable into moral restraints ; *i.e.*, the deliberate actions of men to limit their numbers and bring them on a level with the means of subsistence.

Ricardo added a corollary to this and said that instead of the means of subsistence increasing in an arithmetical progression, the law of diminishing returns begins to operate when production has been pushed beyond a certain point and that additional doses of labour and Capital would result in a less than proportionate increase unless some improvements in methods of production took place simultaneously.

It was however thought that the theories of population would be greatly modified by the great world War during 1914-18 and that the increase would certainly be welcome after the immense destruction of life and property. It might be so in some countries but in India today we find that unemployment problem is very acute and that the lower classes of society are sorely distressed and live on the verge of destitution.

Our standard of living is hopelessly low leading to physical and mental degeneration, so that it is but

true to say that the wheel of things to which, in Lama's Philosophy, the human race is bound has turned full circle and that after taking account of all the social and economic upheavals the problem of population in India is as keen as ever.

The following extract from the Census Report of 1921 gives a most graphic view of the problem : " India is one of the countries in an intermediate stage as regards the process of population growth. She has abandoned more or less the all fashioned methods of limiting population to an optimism, *viz.*, periodic abstinence from intercourse, abortion, sati and infanticide and she has not yet adopted the methods of advanced countries, *i.e.*, postponement of marriage and voluntary birth control. She is at a point where her population is controlled by disease and disease only."

Now that we know where India stands as regards her population we are in a better position to consider the various factors concerned therewith.

Marriage.—The first and perhaps the most important point to consider in this respect is that marriage is almost universal in India. The Hindu and Mohamadan law-givers looked upon marriage as a necessary social institution and a sacrament. Perpetuation of race is a sacred duty and according to Manu the only way in which a man can become exonerated from the debt he owes to his father is to have a male issue.

Then, too, marriage is necessary for the performance of religious rites. But early marriage is a

departure from the wholesome practice of Brahmacharya. But granting even that one has to marry perforce, there is nothing in the mandates of the law-givers to prevent wholesome restraint throughout the married life. Manu himself says that the first son is begotten from a sense of duty, the rest from a love of pleasure. The number of children per marriage is lower in this country than where marriages take place at an advanced age. The figures for Burma also point to the same conclusion. It will be, however, noticed that the fecundity among the Mohammadians is higher than among Hindus. This is partly due to late marriages and partly to widow marriages.

Our crude birth rate is, however, higher than that of European countries. In India we have about 34 births per mille 1925 and the death rate is about 24·7 per mille. Thus we have a natural increase of only about 10 per mille. The following figures indicate our increase during the last 40 years.

1881-1891	.....	13·2%
1891-1901	.....	2·5%
1901-1911	.....	7·1%
1911-1921	.....	1·2%

The insanitary conditions under which Indians live and their proverbial poverty owing to which they cannot take a proper care of mothers, infants and children have taken a heavy toll of lives from us.

The increase in the population has been very great at the wrong end, i.e., in the lower strata of the Indian

society. It is no wonder then that the teeming millions of India are daily becoming poorer and poorer on account of a rapid increase in their numbers.

As regards the upper classes we find a number of different checks operating against marriages among them and against the birth rate in their society.

To sum up the whole situation it is necessary for us to take into consideration the expectation of life and the number of productive years in the life of people of different countries as is shown in the following table :—

				Age when productivity begins.	Average length of life.	Number of productive years.
China	...	...	...	16	20	4
India	...	...	...	16	22½	6½
United Provinces	...	...	...	16	25	9
Europe	...	...	...	17	35	18
America	...	...	...	18	37	19
New Zealand	...	...	...	19	44	25

In a country like India which has a population of about 32 crores the labour force is bound to be great in quantity. But if we look to the quality we have to admit that it is very poor. The difficulties of such an inefficient mass of labour are very great both at home and abroad and we therefore find that this world has so little to help the Indian labourers in the matter of improving their standard of living. The chances of

redistribution of population are so little on account of (1) the inhospitable condition of the soil of sparsely populated parts of India, and (2) the difficulties of climatic conditions, language, caste, manners and customs and the opposition of local inhabitants to admit foreigners generally in their midst.

Having established the proposition that the increase in the population of India and the want of improvements in our methods of production are mainly responsible for our increasing poverty, let us proceed to suggest some measures which are calculated to stop our further degeneration by quick multiplication.

As in so many other departments of national prosperity, so for our present purpose also, it is necessary that illiteracy should be reduced in the country. So long as 92% of Indians are illiterate it is idle to preach to them the benefits of a voluntary limitation of their numbers for they cannot realise its necessity and virtues. Elementary mass education only can have the way for progress in this direction.

France, U.S.A. and almost all other wealthy nations of the world have realised the importance of this suggestion and have acted accordingly. In an educated community a rapid increase in the population is not necessarily an evil, for such an increase might make it possible for the community to introduce a better division of labour and better organisation which might lead to an enormous increase in the production of wealth by the community. The stimulus of increased competition may lead an educated population to become

more forward and more willing to fight with zest the battle for existence.

After examining the conditions in India we become pessimists to a certain extent. We have been trying always for the last few centuries to overtake the food supply and have entirely neglected to take effective steps for reducing our birth and death rates and thereby to make it possible for people to advance intellectually and morally. On the other hand on account of this tendency to increase our numbers rapidly we have courted greater and greater competition, and a fully perfected system of family, caste and communal feuds.

The last-mentioned point really points out to us a solution of almost every malady from which our nation is suffering at the present time. If the Indian people learn how to control themselves in the matter of procreation of progeny, they will be able to attain an undreamt amount of self-control with which they can effectively fight against disease, misery, poverty, illiteracy, and narrow communalism. The amount of material, moral, physical and spiritual progress which would be possible for us then is simply incalculable. And it is this channel through which the ship of our nation has to be steered in order to reach the promised land of joy, prosperity and a fuller life.

OIL-SEED CRUSHING INDUSTRY IN INDIA AND ITS POSSIBILITIES.

Large crops of various well-known oleaginous plants including linseed, rape, mustard, sesamum,

ground-nut, cocoanut, castor, cotton, mahua and other oil-seeds are grown widely throughout the country. An idea of their importance can be easily formed by taking into consideration the fact that 15,156,008 acres of land were sown with oil-seed in India in the year (1925-26). The total estimated yield of different kinds of oil-seeds in the same year was as follows :—

Linseed	about 4	lacs of tons.
Rape and mustard	" 9.1	" " "
Sesamum	" 4.26	" " "
Ground-nut	" 20	" " "

The export figures for the same year show that the export trade in oil-seeds is continuously increasing, and that in the year 1925-26 when we exported them to the extent of 12½ lacs of tons. At present they rank high in the order of importance on the export side of the trade of India. The most noticeable feature of the year's trade was on large increase in the shipment of ground-nut. Linseed, castor and cotton seeds also showed increasing exports. The quantities of the principal seeds exported are shown in the following tables :—

(In thousands of tons)			
	1922-23	1923-24	1924-25
Linseed	... 274	369	371
Rape seed	... 252	337	261
Ground-nut	... 267	257	376
Castor	... 84	85	95
Cotton	... 183	150	161

Sesamum	36	10	31
Copra	14	4	...
Others	67	43	33

Total	...	1177	...	1255	...	1328
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Thus we see that the produce of oil-seeds in India is largely exported whole.

Increasing exports always cause a certain amount of pleasure to every patriotic member of the community but an increase in the export of oil-seeds has an opposite effect. The dangers attending their exportation can be summarised as follows:—(1) It allows other countries to reap the manufacturer's profits and to provide employment to their own people. India is suffering from acute unemployment and the exportation of oil-seeds as a whole means the taking away of work from Indian labourers and giving that work to the people of other countries. (2) The production of oil-seeds means the taking away of a certain amount of valuable chemicals contained in the soil on which they are grown. Unless we give back to that soil the oil-cakes, we are continuously robbing our soil of its fertility. The value of the oil-cake as manure has been recognised by Agricultural experts all over the world. It is, then, really very strange that Indian cultivators are courting bankruptcy, so far as the fertility of our soil is concerned, by exporting annually oil-seeds in increasing quantities. The loss of a great potential wealth, in the form of oil-cakes, to the country cannot be too strongly deplored. (3) The slack appearance

of human beings depends to a large extent on the quality of fats consumed by them. Similarly the health and fatness of cattle also depends on the inclusion of fats in their daily food. A most palatable form in which these fats could be included in the daily diet of cattle is to give them oil-cakes mixed with their daily food. For the improvement of the health of our cattle and their quick regeneration it is necessary to keep as much as possible the oil-seeds in the country in order to get from them plenty of oil-cakes.

In spite of these serious objections to the exportation of oil-seeds as a whole from the country we find that very little has been done to start oil-crushing mills, run on modern lines in India and thereby to check their increasing exportation. Efforts were made, but they did not prove very successful on account of the following difficulties :—(1) There exist high protective tariffs in European countries which encourage the exportation from India of the raw material rather than the manufactured product. (2) There is a better market for the oil-cake in Europe than in India and the freight on oil-seeds is less than the freight on oil and oil-cakes. (3) The shipping and transportation work of India being largely in the hands of foreign countries, they generally charge higher transport rates on oil than on oil-seeds. It is much easier and less expensive for the Indian producer to export oil-seeds instead of oil. (4) In India itself there is a deep-seated prejudice against the use of machine-made oil-cakes as a cattle food or as manure because the Indian cultivator thinks

that it contains less oil and therefore less nourishment than the village-made cakes. He is therefore unwilling to buy it except at a reduced price.

An immense quantity of oil is, as a matter of fact, already manufactured in this country by more or less crude processes. Village oil-mills worked by bullocks and presses worked by hand exist in all parts of the country and supply most of the local demand of oil. Those village Ghanni or Kolhu mills are very uneconomical because (1) Only 38% of the oil contained in the seeds is extracted and the remaining 62% is entirely left in the oil-cake. (2) Only 3 to $3\frac{1}{4}$ seers of seed are crushed per 3 hours and only about 9 to 12 seers of seed are crushed per day. (3) The use of oil-cakes containing 62% of the oil contents of seeds is really harmful to the cattle who are fed upon them. Just as a weak man cannot digest a lot of fat and can digest only a fraction of the quantity of fat which can be digested by a strong man, so the weak cattle of India also cannot digest as much fat as is contained in the village-ghanni-made oil-cake. The ignorant cultivator, wishing to make his cattle strong, feeds him on this super (fat) saturated village oil-cake with the result that they begin to suffer from diarrhœa and dysentery. The mill cake contains a lesser quantity of oil than the village cake, still it contains more oil than the cattle can digest.

Despite these drawbacks Indians have not generally adopted the hydraulic presses or accumulators or steam driven oil mill machinery which can save a large part

of the oil, which is allowed to run waste at present. Even in this age we find in southern India people using mainly the boiling out process with the slight improvement of squeezing the meal in a twisted cloth. In the Central Provinces and in other parts of India we still see the Roman Mortazium being used with no improvement other than that it is being worked with bullock power. The power driven ghanni obtains 30 to 33 % of oil in from $1\frac{1}{2}$ to $1\frac{3}{4}$ hours according to seasonal temperature.

To make the industry paying it is necessary (1) to erect and work a model mill, (2) to have trained operators and managers of these mills and (3) to install plant for refining the oil, for manufacturing hydrogenated 'vegetable ghee' or 'hardened' oils for making soaps, candles, glycerine, water-proofing, electrical insulation, wax, and wax-like compositions.

The tremendous amount of work which would be created for the Indian people if this industry was improved in India has been amply proved by the foregoing observations. The increased imports of these finished products into our country have already taken a high price from us for our mistake. The same raw materials which we export from India return back to us in the form of finished products and the Indian consumers have to pay freight both ways, the profits of middlemen and manufacturers and the wages of skilled foreign labour employed on them. The oil industry has largely helped U.S.A. to become a leading

country in manufactures, and other countries are rapidly adding to their national wealth by improving their oil industry. When will the time come for India to realise the great national importance of the oil-seed crushing industry in India ?

COTTON INDUSTRY IN INDIA

OUTLINE

1. A brief account of the early history of the cotton industry.

2. Physical conditions necessary for the growth of cotton. Various processes of production—sowing, picking, ginning, baling, etc.

3. The importance of cotton-growing in India, her position as a cotton-grower in the world.

4. Improvements effected in the varieties of cotton grown in India, and their influence upon the future of the industry.

5. Acreage of production and export. Work of the Indian Cotton Committee.

6. Suggestions for the improvement of the industry.

Our modern life calls for an endless variety of articles that are durable and strong for which we use wood, stone and steel as raw materials—articles that are transparent like glass, elastic like rubber, tough like leather, light like cork, and so on. You can prepare a long inventory like this. On this long inventory of articles of every-day use you would find clothing occu-

pying a very outstanding place. In fact it comes next to food. For the satisfaction of this requirement suitable material is needed. We need a kind of material that would not hamper the free movement of the body—something flexible, durable and washable. Cotton is the most exquisitely suitable fibre, which satisfies this important human want, and it is considered as one of the most important commodities for trade and commerce.

About nine-tenth of the world supply of cloth consists of cotton. It includes that also which is used in the manufacture of woollen cloth. Cotton is used in the manufacture of other articles as well.

Cotton is a vegetable fibre obtained from the cotton plant. It has got many species and some of the important varieties are : (1) *G. barbadense*, linn. (2) *G. brasiliense*, linn. (3). *G. hircutum*, linn. (4) *G. herbaceum*, linn. (5) *G. arboreum*, linn.

The first species is one of the most valuable varieties of cotton. It is chiefly grown in islands and is known as the 'sea island cotton.' South Carolina, Georgia and Florida cultivate this cotton on a large scale. The "sea island cotton" is very fine, strong, and silky and commands a high price. The staple of this cotton is from $1\frac{1}{2}$ inch to 2 inches long.

The second species of cotton is grown in India, China and Africa. It has a small shrubby plant which grows to a height of 2 to 6 ft. The length of its fibre varies from $\frac{5}{8}$ to 1 inch.

The third variety of cotton is grown in South America but its fibre is not good. The fourth species is largely grown in India and China. This cotton has a tree-like plant and its fibre is poor and dirty, but is capable of improvement.

The fifth variety is found wild in Upper Guinea, Abyssinia, Senegal, etc. It is the 'tree cotton' of India and Africa, being typically a large shrub or small tree. In India it is known as 'Nurma' or Deo cotton. Commercially it is comparatively of minor importance.

Cotton is generally grown in the tropics and in the warmer parts of the temperate zone. In the tropics it is generally a perennial that is, it grows year after year without replanting; but the tropical plants do not yield so well as do the plants that are grown in the warmer temperate zone, where seed is planted each year. Cotton requires a long growing season free from frost at least from six to seven months. The plant is very particular about climate so much so that in spite of continuous effort to extend its cultivation, it is profitably grown on a large scale in only a few parts of the world. Not only does the plant require a long growing season, but it requires a particular type of rainfall—abundant in spring and early summer, but lighter in the late summer and autumn. The best type of summer climate is sunshine and shower type with plenty of warm sunshine specially in June and July, but the autumn must be fairly dry to permit picking. After the balls are open the white cotton protrudes and then it could be easily stained and injured by rain.

The plant is less exacting in the matter of soil than it is in the matter of climate, but its yield is abundant in fine, rich, black soils.

The name cotton is of oriental origin and is derived from the Arabic word *Katán*. About 306 B. C. Theophrastus, the disciple of Aristotle, mentions the use made by the Indians, of the capsules of a downy and silvery substance which bursts open some two months after the flowers have reached maturity. He observes that the trees from which they (the Indians) make their clothes, have leaves like those of mulberry. They set them in rows so as to look as vines at a distance. This evidence from quite an independent observer seems to point to the interesting fact that the Indians in those days were cultivating the plant on a large scale to provide cotton clothes for their people.

Herodotus, the Greek philosopher and the father of History, also mentions the cotton plant cultivated by the Indians.

Although no exact date can be assigned to the discovery of cotton, but, as a matter of fact, India has been the home of cotton trade from the earliest times. The cotton cloth of India was known far and wide. The term calico has originated from the fine woven cloth of Calicut. Dacca achieved great renown by producing the finest cloth that the world had ever seen. The 'malmal' of Dacca is still famous for its delicacy and tact of human ingenuity.

The delicacies and luxuries of India decorated and embellished the palaces of the great Asiatic and Euro-

pean potentates. Since the rise of the great European powers and their scramble for the supreme control of Indian trade, the prosperous trade of India began to decline.

Cotton is generally sown in the month of March or April. Generally the seeds are sown in rows and the crop receives careful attention. In some parts cotton crop is sown broadcast (often mixed with other crops). The cotton seeds are placed in groups a foot or more apart in rows. The strongest plant of each group is allowed to remain and the others are weeded out. The flowers appear about June, bloom for two or three days and then fade and fall. The blossoms are at first white or pale yellow but on the second day after opening they turn red.

Not only is thorough preparation of the ground necessary before the seed is sown but often the plants need constant attention and care during their growth. Grasses and weeds are destroyed and the ground is kept loose by frequent cultivation. In the mid-summer the plants bloom profusely and the flowers are superseded by green pods, known as balls. The growth of the plant is succeeded by the growth of balls which contain white fluffy balls and seeds. The balls grow continually, until they reach the size of a hen's egg. Towards the end of July and the beginning of August the seed of cotton is ripe and then the cotton balls begin to protrude. Soon the field is a mass of white—a lovely sight indeed.

When cotton is ripe, it is picked by men, women and children who gather it in their respective baskets,

or clothes whose one end is tied round the waist and the other end round the neck. The cotton-picking lasts for two or three months for the balls do not all ripen at the same time. The cotton that opens late is comparatively of an inferior quality. Sometimes the picking goes as far as the spring of the succeeding year. The spring cotton is, however, of an inferior quality. The cotton-picking by hand has been keeping pace with the march of time and it had to fight a fierce battle, in recent years, with the introduction of new machines which in the end had to yield to the supremacy of its bitterest enemy. The new methods proved unfruitful because all cotton does not open at the same time. If you go to the Deccan you will surely find people busy in their work from morning till night. Sometimes the snowy white fibres of cotton are flying about in air and sometimes they travel long distances.

The quantity of cotton picked varies from one picker to another, the reason being that all do not have the same skill and industry. The cotton picked by a person varies from one hundred to three hundred pounds or more varying according to the nature of the crop.

After the cotton is picked it is left to dry and when it is completely dried the process of cleaning begins. By this process cotton is separated from the dust and other impurities. This is effected by rollers or by saw-gin invented by Eli Whitney in 1793. The saw-gin is a fine net of wires and it is employed in separating the cotton of short staple which rigidly

adheres to seeds. The cotton fibres are drawn through the holes which allow no passage to the seeds. Before the invention of this machine, cotton was separated from the seed by hand, and, later by a modern device, a very laborious and time-consuming process. The application of this method has greatly reduced the price of cotton yarn.

The next process is of baling which is carried on by means of presses. The cotton bales are partly covered with burlap or bagging and bound or tied with light iron bands or ties. In case the cotton is to be shipped a long distance, it is economical to compress it further into smaller bales in order that it may occupy less space. This is usually done at the large market centres where carding is also done. The Indian bales generally contain 400 lbs. of cotton. In India such factories are to be found in all the important cotton markets.

The peculiar feature of marketing cotton is known by what is called 'futures.' 'Futures' are the contracts made to deliver a definite quantity of cotton at a future date within an agreed period and at a fixed price settled at the time of entering into the contract. The variety of cotton promised to deliver is definitely stipulated. The delivery of cotton is never made contrary to the agreement.

The black cotton soil of Deccan is particularly suited to the cultivation of cotton and hence cotton is a dominating crop in the black cotton soil area. This soil is very rich because of the chemicals present in it,

which furnish nourishing food for the cotton plant. Despite the fact that the black cotton soil yields very good crops every year, the total produce of cotton in India as a whole is poor. Cotton suffers in quality also. Probably all the nature varieties have deteriorated through the exhaustion of the soil and careless cultivation. But success has been attained to some extent by improving the indigenous plant and educating the cotton growers.

India's cotton is chiefly grown in Bombay, Berar, C.P., Hyderabad, Gujerat, the ceded districts of Berar, Coimbatore and Tinnevely districts of Madras.

Bombay—

In the Bombay Presidency cotton is grown in the following areas:—

1. North Gujerat.—The adjoining districts of Baroda State, and the greater portion of Kathiawar where trade variety Dholera is produced.

2. Southern Gujerat—including the Baroach and Surat districts in British territory and the Mansari district in Baroda where Baroach cotton, the barometer of the Indian cotton trade, is grown.

3. The Bombay Deccan including the districts of East and West Khandesh, Nasik, Ahmadnagar and Sholapur, also the Northern part of the Bijapur district of the Hyderabad State, where Khandesh cotton is grown.

4. The Carnatic comprising the districts of Dhurwar, Belgaum and the greater part of Bijapur as well as the Indian States of Kolhapur and Sangli where Kumpta-Dharwar is obtained.

5. The territory to the left of Sind in the Nawabshah, Thar, Parker, and Hyderabad districts where Sindh cotton is raised. In parts of the Bijapur district 'Westerns' are also grown as in the Madras Deccan.

Punjab—

The cotton-growing area in the Punjab may be divided into three parts: (i) the territory lying north-west of a line drawn from Ambala to Hissar where Sind-Punjab cotton is cultivated; (ii) the Punjab canal colonies in the districts of Lyallpur, Montgomery, Jhang, Shahpur, Gujranwala, and Multan where Punjab American is grown under irrigation; and (iii) the territory south of the line from Hissar to Ambala where a variety of Bengals known as South-east Punjab is grown.

As early as 1903 Sir Malcolm Hailey now the Governor of the United Provinces introduced successfully the cultivation of the American variety in the Shahpur district of the Punjab, where he was at that time the Settlement Officer. Since then the Commercial cultivators of the canal colonies have taken to the cultivation of this variety in preference to the Indian. This variety is locally known as 'Narma.' Another improved variety of the American cotton called 'Ghora Narma' has recently been introduced and is fast sup-

planting the remains of the Indian variety. This variety has gained the favour of the cultivators because it yields a fine staple which commands a high price in the market.

United Provinces—

Cotton is also cultivated in certain parts of the United Provinces. Chief cotton-growing centres are Bulandshahr, Muttra, Aligarh and Agra districts. The chief varieties are (i) United Provinces, (ii) white flowered Aligarh (a variety selected by the Agricultural Department), and (iii) Cawnpore American grown in canal irrigated areas.

Central India—

In Central India cotton raised is of two kinds :—

(i) Malwa Cotton, and (ii) Central India Cotton.

Rajputana.—A little cotton is also grown in Rajputana. It has a very short staple, hence inferior.

Mysore.—In Mysore the chief areas growing cotton are Chitaldrug and Simoga districts. The chief varieties are known as Kumpta and Dharwar-American.

Burma.—Burma grows a short staple cotton. The chief centres are Thayetmyo, Sagaing, Lower Chindru, Meiktila and Myngyan. The staple is known as Wan gale.

Madras—

The cotton-growing tracts in the Madras Presidency fall into three well marked divisions :—

(i) The Deccan table-land including the districts of Bellary, Anantapur, Kurnool and Cuddapah in which Northern and Westerns are grown. The former is

chiefly in the first two-named, and the latter is chiefly in the last two-named districts.

(ii) The Coromandel coast including the uplands of Gantur, Kistna, Nellore and Godavari. Of these the district named first is most important. It grows Cocanadas.

(iii) The southern districts of Tinnevely, Ramnad, Madura, Trichinopoly and Coimbatore where Combodia (a variety of American uplands the seed of which was obtained in about 1905) is grown on red soils preferably with irrigation, and Tinnevallies of which pure Karunganni, a variety selected by the Agricultural Department, is grown in the black soils.

Bengal—

In Bengal the chief cotton producing areas are Chittagong hill tracts, the districts of Bankura and Midnapur, and in Assam the Garo and the Lushai hills. The product of these parts is known as Kamila cotton.

Behar and Orissa—

The acreage in Orissa is insignificant. In Behar the districts of Saran and Santhal have more than 10,000 acres devoted to this crop, and with Ranchi district they produce a variety called Behar and Orissa. A variety known as Gathia is found in scattered parts of the same province.

North-West Frontier Provinces—

Peshawar and Dehra Ismail Khan districts of the N.-W. F. P. grow the bulk of the crop under irrigation. In the trade phraseology this cotton is known as N.-W. F. P.

The average yield per acre in India is 400 lbs. In 1918, the cultivated area was 25 million acres with a yield of 4 million bales while in 1919 the acreage shrank to 20 million acres with yield of 3·7 million bales. The yield is not high in India. It is difficult to say whether it is due to the selection of seed, or careless cultivation or defective manuring. In 1921 the Indian acreage was two-thirds of that in America but the yield was only one-third, being only at the rate of 85 lbs. of lint per acre. Following statistics will show the quantity of cotton produced, and exported to other countries :—

Indian cotton produce.

1924-25	1925-26	1926-27
Bales	Bales	Bales
(400 lbs. each)	(400 lbs. each)	(400 lbs. each)
6,088,000	6,250,000	4,973,000

The exports of cotton are as follows :—

1923-24	1924-25	1925-26
3,763,858 bales	3,553,434	4,173,120

The principal purchasers of Indian cotton are Japan and China which together took 59 per cent of the total export during 1924-25. Besides these Germany, Belgium, the United Kingdom, Italy and France who are large consumers of Indian raw cotton, had 5, 6, 5, 14 and 4 per cent. respectively.

The principal exporting centres of cotton are Bombay, Karachi, Calcutta, Rangoon, Tuticorin and

Madras. Bombay is the most important exporter of cotton in India.

India ranks second in the growing of cotton, first being United States of America.

A great deal of manufacturing is done by hand in India, but more recently machinery has been introduced, and mills and factories are increasing. Thousands of people are employed in these factories. The following figures will give an idea of the progress of the textile industry in the whole of India :—

Years ending 30th June.	No. of mills.	No. of spindles.	No. of looms.	Average No. of hands employed daily.	Quantity consumed.	
					Owt. or	Bales of 892 lbs.
1925	387	8510633	154202	367877	7792084	2226810
1926	394	8714168	159464	373508	7396844	2113384

Lack of scientific knowledge and technical training are the chief drawbacks towards industrial progress. The British Government does not repress manufacturing, nor do they actively encourage it, for the British manufacturers naturally desire to sell their own products in India. In fact, that is one of the chief reasons why Great Britain desires to retain this populous dependency.

Besides cotton fibre there are many things that are obtained from the cotton plant. The cotton seeds are pressed hard by means of a kind of machine and cotton-seed oil is obtained. This oil is almost odourless. The full appreciation of the value of this by-product came in the latter part of the 19th century.

The use of this oil has been continually developing. At present the oil is used for cooking and in pharmacies. It is also employed in the preparation of lard and margerine. Sometimes it is substituted for olive oil. The coarser quality of oil is used for making soap, candles, lubricants and illuminants. The cotton seed cake or meal furnishes a good food for livestock. The genius of man has utilized the rugged cotton stalks of the cotton-plant for the production of superfine milk-white writing paper. The stalks of cotton serve as fuel as well. At the oil mills, the short, fuzzy cotton which is still sticking tenaciously to the seed, is removed by a special machine and becomes the linters of which cotton bathing and cotton felt are made.

Let us now consider the problem of labour that is employed in the production of cotton. In some parts of the cotton-growing area especially in the Canal Colonies of the Punjab, seasonal labour is employed and its remuneration is often paid in kind. The workers are paid on a piece-rate basis.

The Government has been devoting its attention to the extension of cotton cultivation. In 1921 the Government of India created an advisory body, known as Central Cotton Committee, which served until 1923. In 1923 a Cotton Cess Act was passed in favour of further development in the interests of the Central Cotton Committee and the promotion of agricultural and technical research in cotton. The Central Cotton Committee rendered an admirable service to the country by helping in various ways the cotton-growing in India.

The Transport Act of 1923 permitted every Local Government to define specifically, with the approval of its legislature, the cotton-growing areas, that need protection, and to prevent the import of cotton from illegal centres.

Before the Act was passed the cotton of inferior quality was imported into the staple cotton areas for purposes of adulteration and thus ruining the reputation of those areas.

The Ginning and Pressing Factories Act (XII of 1928) has been passed very recently. This has provided a certain control over the ginning and pressing factories which are required to make bales of certain fixed quality and quantity and to mark them with a definite mark and serial number.

In India the best cotton is grown in Broach, Hinganghats, Gangetic Valley and the Tinnevely districts of Madras. The high prices of cotton in recent years have encouraged the production of cotton on a large scale, but still the cotton-growers need financial assistance. The Sukkar Barrage scheme of Sindh gives a hope of further extension of cotton-growing. It is even possible that the staple suitable for fine fabrics may be cultivated in India on a commercial basis, for there is a good evidence that delicate fabrics were produced from raw materials in the past. For instance in a letter dated 5th September, 1818, the Court of Directors wrote as follows :—" The delicate fabrics of Dacca were at all times manufactured entirely

from the cotton of that district which is the finest of all cotton in India and is probably finest in the world." The problem of improving the variety is still receiving attention and conditions of revival may be discovered after careful experiment. Improvement in yield and staple is among the first problems that ought to engage the attention of the Central Cotton Committee.

The cotton industry is gradually increasing and it is hoped that India will make further advance in her industrial development and acquire a high position in the trade and commerce of the world as a textile producer.

TEA INDUSTRY IN INDIA

OUTLINE

1. Introduction.
2. A short account of the early history of tea-planting in India.
3. The gradual passing of the industry into the hands of the Western planters.
4. Physical conditions necessary for the growth of tea plants—processes of production—propagation, planting, cultivation, pruning, and manufacture of tea.
5. The present state of the industry with statistics of export, and total quantity produced.
6. The world consumption and India's position.

7. Suggestions for improvement.

Tea is known in almost every quarter in India. It is commonly sold in bazaars, and almost every shop-keeper has a few bundles of it. Modern India has become much accustomed to the use of tea, because the progress in civilization has brought in its train a great variety of wants. Present rate of increase in consumption makes one believe that in short time tea will become almost a universally consumed commodity in India. India has been exporting large quantities of tea every year. United Kingdom is the chief importer. She alone imports 75% of the total tea exported from India.

Before giving an account of the tea culture in India, it is highly desirable to trace its origin and its successive career, with all its vicissitudes through the succeeding decades.

There is a traditional belief, which pervades the ancient literature of China, that the virtues of tea were first discovered by the Emperor Chinney about 2737 B.C. The tea was used only as a regalia for royal entertainments for many centuries, and at an early date the tea novelty of China visited the West and the East, but people could not realize its full advantages for many centuries. The dawn of a new era of enlightenment, and advancement in civilization made the people to recognise the usefulness of tea leaves. The Chinese called it 'Tcha' and consequently it is known 'Cha' in almost all the vernaculars of India and 'Tea'

in most of the European countries. The name tea, which is given to the leaves of a tea bush prepared by decoction as a beverage, is also extended by analogy for an infusion or decoction of other leaves, *e.g.*, camomile tea, and similarly for an afternoon meal at which tea is served.

Tea, as we know, was originally grown in China but at an early time, before the dawn of history it was found growing wild in Assam. How tea came to India and who brought it, is not known, but this much is sure that the Assam tea is the offspring of the China tea. As a consequence Assam has been the chief tea growing centre in India. This leads us, by the way to know as to what extent tea culture flourished in Assam and how its development attained its present stage.

In the early times there were no tea plantations. It grew wild in the forests of Assam. But with the advent of the British Government in India and the exercise of its activities in various directions, a new era began in the history of the tea of Assam. As early as 1823 Mr. Robert Bruce, an Englishman, discovered that the tea shrub grew wild in the forests of Assam. Not long after 1834 Lord William Bentinck appointed a committee for the introduction of tea cultivation in India. The Government first decided that the tea of Assam was suitable for commercial purposes and then appointed Mr. C.A. Bruce, the brother of Mr. Robert Bruce, as superintendent of the Government tea forests. Seeds were brought from China and tea plantations were

started near the confluence of the Brahmaputra and the river Kundil, but as the experiment failed on account of the porous nature of the soil, the plants were then transferred to Gaipure. A few years later the tea estate was sold to the Assam Company. At first the Company had to encounter many difficulties because Assam in those days was an isolated part of the country and the means of transportation and communication were in most undeveloped state, but by 1852 the Company had made considerable progress along this line.

Ceylon has largely extended its cultivation of tea, and a large quantity of tea is exported to foreign countries every year.

Tea was experimentally started in the Darjeeling district in 1840 and in the same year introduced into Chittagong district. The first garden in Cachar was opened in 1855. The industry in the Tarai started in the year 1862, and in the Western Doons where climate and soil proved extremely suitable for tea cultivation twelve years later, leading to enormous gains for the Company.

The tea industries achieved a great success during the Great European War, but in 1920, the markets were flooded with huge quantities of inferior tea held on behalf of Government. This coupled with a sudden rise in the value of rupee brought a great loss to some companies. This stagnant period was succeeded by a period of brisk trade which lasted for three successive years.

The tea plant flourishes in high, easily drained grounds, up to 3,500 ft. It also thrives best in places which are visited by frequent showers of rain to bring out leaf-bud, from which the finest tea is made. Assam gets rain nearly all the year round and therefore it produces large quantities of tea every year.

Tea is not only cultivated in Assam but in other parts as well. In Northern India tea is cultivated on a small scale, in United Provinces in the district of Dehra Dun, Almora and Garhwal; and in Chota Nagpur district of Bihar and Orissa. In the Punjab tea is grown in the Kangra valley, the states of Mandi and Sirmur and to a small extent in the Simla Hills.

Tea has also been profitably cultivated in Southern India since 1853, chiefly in the Wyaad, the Nilgiris, and latterly in the Anamalais and the high ranges of Travancore. The depreciation in the coffee values in the early part of the present century has led to the cultivation of considerable areas, formerly under forests, into tea gardens.

The production of tea in Burma is insignificant. Total acreage under cultivation was less than 2000. The tea grown in the Shan states is chiefly used for making let-pet or a picket tea, which is eaten as a condiment and not drunk as a decoction.

Assam is the chief tea centre in India. Tea cultivation is increasing with the lapse of time. The following figures indicate how tea-growing is increasing in India as a whole :—

Years.	1922	1923	1924	1925	1926
Acreage ...	Acres	Acres	Acres	Acres	Acres
Assam ...	412,100	411,900	413,300	416,500	420,600
Rest of Northern India	203,200	203,500	204,400	211,200	213,000
Southern India ...	92,900	95,800	97,000	100,000	105,100
Total ...	708,200	711,200	714,700	727,700	738,700

The following figures give us an idea of the total amount of tea grown in Assam and India as a whole.

Production.	lbs. (1,000)	lbs. (1,000)	lbs. (1,000)	lbs. (1,000)	lbs. (1,000)
Assam ...	199,965	237,601	237,153	225,185	241,932
Rest of Northern India	75,126	92,076	91,351	89,017	99,804
Southern India ...	36,548	45,679	43,752	49,305	51,918
Total ...	311,639	375,356	372,256	363,507	393,714

The principal buyers are England, France, Italy, America and Russia.

India does not consume the whole produce of her tea, but she exports tea to other countries. The following figures will give an idea of the export of the India tea. India is the largest exporter though China is the largest producer.

	1922-23	1923-24	1924-25	1925-26	1926-27
	lbs. (1,000)	lbs. (1,000)	lbs. (1,000)	lbs. (1,000)	lbs. (1,000)
From Northern India (Calcutta and Chittagong) ...	253,796	296,778	299,747	280,024	304,957
From Southern India (Madras parts) ...	30,886	38,560	37,717	43,183	42,935
From Bombay, Sindh and Burma ...	4,114	3,417	2,843	2,576	1,372
Total ...	288,296	338,755	340,107	325,783	349,264

If you go to Darjeeling and Assam you will find tea gardens flourishing on a large scale. The bungalows of managers and their assistants are standing on the lawns of the tea gardens. In close proximity to these gardens you will notice the factory buildings and the quarters of the factory workmen.

In the past these were ugly and unwieldy stretches of tea ground and plucked down to bushes about 3½ feet in height; but now the scene has entirely changed. Modern Assam is adopting new methods and using improved, and up-to-date machines and appliances. Consequently the tea planters have made much progress, and are cultivating on a large scale. This has reduced the cost of production considerably, leading as a consequence to a fall in price.

Tea-planting necessitates the employment of thousands of persons. Men, women and children all work as labourers. They go to the tea gardens and

pick the new delicate buds and fresh, green leaves from the young shoots. The process of picking is very important and interesting. The managers and superintendents personally supervise picking and give necessary instructions to the pickers. Many a specialist is specially employed for this purpose.

When the sun is very hot the picked leaves are covered by a piece of cloth which protects them from heat; sometimes it is necessary to make the piece of cloth wet because tea is spoiled otherwise.

The weighing machines are there, ready to weigh the tea leaves picked. The wages vary according to the quantity of tea picked, that is, the labourers are paid on piece wage system. Next comes the process of withering which is of vital importance. The green leaves are hoisted into lofts and then they are spread on the liers of trays.

When temperature is high tea leaves are brought to cool-rooms where they are allowed to wither. But in cold districts some heat is required.

If there is heavy rainfall the leaves become wet and so fans are employed until water is dried up completely. In the hill districts tea takes almost 18 hours to wither, but it is still green and smells like a ripe apple. After withering tea leaves are sent to rolling factory. When they are rolled they are transferred to fermenting rooms which are separated from the main factory building. Every precaution is taken and in accomplishing it successfully skill is needed. This process also is

important. Tea is spread on glass and zinc plates and sometimes on mats or wooden tables or tiles with free access to the air to oxidise or ferment. After fermentation scene is changed and the colour becomes yellowish. The fermented tea is again brought to the factory and the leaf is fired and dried and the black tea resulting is graded, bulked and packed in lead lined chests of about 100 lbs. each, soldered up and sent to the port for shipment.

The principal grades of commercial tea being Flowery or Broken Orange Pekoe, Orange Pekoe, Broken Pekoe, Pekoe, Pekoe Souchong, Fannings and Dust. These names are derived from China. Flowery Orange Pekoe is the bud, Orange Pekoe, the tender leaf, and Pekoe, the second leaf. Pekoe Souchong is from a third leaf when a bush is medium plucked and coarse plucking yield inferior teas known as Souchong and Congons. But the commercial names have no longer any relationship to particular leaves. The broken leaf of each grade generally yields a stronger tea than the grade itself and consequently commands higher prices. The bulk of the tea produced in India is black tea. In some places the leaf is steamed instead of withering, and is called 'Green Tea.' The principal leaf grades of this tea are young Hyson, corresponding to Orange Pekoe, Hyson No. 1 to Pekoe, Hyson No. 2 to Pekoe Souchong, Gunpowder, Twankey, Fannings and Dust.

Another kind of tea known as Bick Tea is prepared in small quantities in the Darjeeling and Kumaon

divisions for the Tibetans and Bhutan markets but practically the trade has no commercial value. There was, however, a considerable trade in dust tea to the Chinese ports of Hankow and Shanghai where it was manufactured into Brik Tea for the Russian market. Generally speaking, all the important districts have to obtain their labour from considerably long distances and this involves a heavy outlay and an elaborate machinery to control recruitment.

Though the coolies are now better but nevertheless they are still in a state of primitive civilization and it is hoped that the Government will take measures of immediate relief and raise the poor labourers who will not only live well but effect a corresponding increase in the production of tea. Healthy industries are a vital necessity to India.

In Assam the employers have to face great difficulties in recruiting labourers. They are generally recruited from United Provinces, the Central Provinces, Bihar and Orissa and the East Coast. The Assam Labour and Emigration Amendment Act of 1915 made important changes in recruitment of labour for Assam which is regulated by the Assam Labour and Emigration Act 1901 (VI of 1901). Recruiting by contractors has been abolished and an Assam Labour Board formed for supervision of recruiting by local agents and garden sirdars.

Darjeeling district has facilitated its transportation by the introduction of good roads and railways. Bengal Assam Railway has made it easy for Assam to transport

its tea to Chittagong. Some of the Assam tea is sent to Calcutta by an excellent service of Cargo Steamers. On arrival in Calcutta, tea is warehoused at Kidderpore, where if for auction, it is stored, bulked if necessary, lotted, sold and eventually shipped. In Southern India also the conditions are improving. For many years in the past India has been exporting a superior type of tea seed to other tea-producing countries, chiefly Sumatra, Java and Ceylon.

The unit of sale is uniformly the lbs., *i.e.*, for London and f. o. b. for America. The unit of shipment is the chest which varies in weight approximately to 120 lbs. net according to the fineness or coarseness of the quality packed.

Fannings and Dust would approach more nearly to the maximum weight while Souchong owing to the size and coarseness of leaf would turn the scale or nearer the lower weight.

Shipments from India fall into two classes :—(a) Consignments direct from the garden to London where they are sold by auction in Mincing Lane. (2) Consignments sold at auction in Calcutta and shipped thence chiefly to what are known as outside destination, *i.e.*, countries other than the United Kingdom. The Calcutta tea auctions commence in May and continue weekly until January in the following year.

By the Indian Tea Cess Act (Act IX of 1903) a cess was imposed on the exports of tea. The Indian Tea Association was required to buy a tea cess which would furnish them with funds to advertise and stimulate

tea drinking habit and by the appointment of agents in India and abroad to push the sales of Indian grown tea. The advertisement that we see on city walls is as follows:—‘Hot tea cools in summer and warms in winter.’ Besides this several other methods are used to stimulate demand for tea. Sometimes the tea rooms are furnished with gramophones and songs composed containing the praises of tea.

If the Government took a little more active interest it would be possible to increase the acreage. The future of tea industry in India seems to be brighter, and it should be developed to its fullest extent.

The waste products of tea are not thrown away, but they are sold to chemists who manufacture from it a kind of drug known as Caffine.

The steel chests of tea are too expensive to be used by every producer and so wood chests are used which are chiefly made of toon. Siml also is used for making tea-chests. These trees largely grow on the Himalayas. Some of the woods have a bad reputation for tainting the tea and others require prolonged seasoning before they can be considered suitable.

The cultivation of tea is steadily increasing in India. There is a great scope for the extension of tea cultivation in India, because certain suitable places in the Himalayas and other parts of India are still lying unused.

TEST QUESTIONS.

PRODUCTION.

- ✓ 1. What is meant by Production ? Can man ✓
create matter?
- ✓ 2. Name the different ways in which utilities ✓
may be created.
- ✓ 3. Name the different factors of production, ✓
and explain the term ' land ' as used by economists.
4. In what manner is the production influenced
by Physical Geography of a country ? Why is India a
leading agricultural country in the world?
- ✓ 5. Why do not all of the agricultural labourers ✓
of the country concentrate their labour upon the most
fertile soil of the country, leaving all less fertile soils
uncultivated?
- ✓ 6. State the Law of Diminishing Returns. Are ✓
there any exceptions to the Law? If any, state them.
- ✓ 7. In what countries in general do you find the
Law of Decreasing Costs in operation, and why?
8. Explain what is meant by the Extensive
and the Intensive margin of cultivation. What sort of
cultivation is being done in India?
9. Does the Law of Diminishing Returns apply
to the following:—(a) City Building Lots, (b) Fisheries
(c) Capital, (d) Pottery, (e) Labour?
10. Comment on the statement:—
(a) " Man is dependent upon nature in every
aspect of his life."

(b) "Man can control the forces of nature and modify his environments."

11. Mention the important raw materials produced in India. How far are they utilised in India? What would be the effect of preventing their exportation from India? *شماره*

12. Distinguish between Intensive and Extensive cultivation. Prove that it becomes profitable to cultivate better lands more intensively when it becomes possible to extend the margin of cultivation.

✓ 13. (a) Discuss the merits and demerits of the Indian joint family system.

(b) What are the economic effects of the Indian Law of Succession?

✓ 14. Give the characteristic features of the different factors of Production in India.

15. Compare the average wealth per head of the population of India with the *per capita* wealth of other countries. Account for the difference.

16. What are the extractive industries? Choose three extractive industries and trace one raw material of each of them through all the processes of manufacture, etc., until it reaches the consumer.

17. Explain the calculations that are necessary to discover the income of the Indian farmer.

9. 18. Mention the chief kinds of goods necessary in order to produce any commodity. State how services of each kind are remunerated.

19. Describe briefly any three machines you have seen and tell what they enable man to do. Why do we use the costly machinery?

20. What are the characteristic features of the present stage of economic effort?

21. Explain clearly the conception of increasing and decreasing returns and consider the part played by internal and external economies of production in bringing about increasing returns in an industry.

22. Describe the different stages in the evolution of economic effort and give their characteristic features.

23. "India is rich in the possession of natural resources." How is it then that India is poor?

24. Select any two agricultural products of India. Suggest improvements in their production and utilisation that would lead to the enrichment of the country.

25. (a) In order that India may become rich again should we first try for agricultural improvements or industrial development?

(b) Account for the decline of the Indian industries.

26. Discuss the possibility and advisability of using modern agricultural machines and implements in India.

27. How has the development of the means of communication and transportation in India affected rural industries and agriculture in India?

28. Account for the industrial backwardness of the people in India. Can India become a leading country in manufactures? Give reasons in support of your answer.

29. How has the introduction of Jute and Tea cultivation affected the people of India? Why does the Indian Government impose duties on the exports of tea and jute from India?

30. Discuss in detail the processes, organisation, prospects and suggestions for improvement of any cottage industry.

✓ 31. Account for the agricultural backwardness of India. How can the condition of the Indian peasant be improved and India be made more wealthy?

✓ 32. What conditions favour the growth of (a) a large industrial centre, (b) a prosperous sea-port, (c) a profitable railway line? Use Indian illustrations.

✓ 33. What conditions have favoured the development of railways in the Indo-Gangetic plain? Why are there no railways in Nepal or Kashmir? Select any Indian railroad, name the chief cities on the line and give the density of population and main type of freight of different sections of this line.

✓ 34. Write a short note on the natural resources of India and say how people are now-a-days utilising them.

✓ 35. What are the chief sources of power used in India? Why do people use different sources of

power? Indicate directions in which more power may be sought and applied.

36. Draw a map showing the soils in different parts of India and the areas that need more irrigation.

37. Discuss the importance, uses, production, supply and consumption of any two of the following products:—

Wheat, rice, cotton, jute, tea, tobacco and sugar.

38. India is rich in the possession of natural resources. Why, then, are the Indians poor? Suggest some means of improving the economic condition of India.

39. Select any two important industries of India. Give their past history, present condition and your suggestions for their future development.

40. Draw a map of India showing the important industries of different parts of the country.

✓ 41. Define and discuss the factors of production and bring out clearly their relative importance.

✓ 42. What are the reasons that led to large scale business? Does it pay to produce on a large scale? If so, name the advantages accruing therefrom.

43. What is meant by the terms 'internal' and 'external' economies of production? In what way does a large scale business avail of these?

Describe briefly the history of productive effort.

44. Define the Law of Diminishing Returns. Are there any exceptions to this Law? Is it applicable to manufactures? Explain the term 'decreasing costs.'

LABOUR.

✓ 1. Define Labour. Is labour always disagreeable? Is it perishable?

2. Show that what may be production from the individual point of view may not be production from the social point of view.

✓ 3. Enumerate the various requisites to efficiency of labour. What kind of labour do we have in India?

✓ 4. What do you understand by the term 'Mobility of Labour?' Is labour in India mobile? Give reasons for the immobility of labour in India.

5. Explain the statement:—"There is an army of labourers, and the factory managers still complain of the dearth of labour."

✓ 6. What is meant by the density of population? On what factors does it depend in India?

7. (a) How are the people of India distributed in different occupations?

(b) What factors determine the labour force of India? Estimate it.

✓ 8. Account for the high rate of infant mortality in India. Discuss its consequences.

9. What is meant by dynamics of population? What is being done by the Government and by the

philanthropists to decrease the high death-rate in the country? In what manner do the Municipal and District Boards reduce the death-rate. What would you do to stop the growing rate of mortality if you were appointed a chairman or an executive officer with powers of initiative?

10. Comment on the statement :—

(a) "Indians are a poor people in a rich country."

(b) "Indian labour is low paid but dear."

(c) "There is an underemployment in India but industrialists complain of scarcity of labour."

11. Draw a map of India showing the density of population in different parts of India.

12. Compare the average wealth per head of the population of India, with the *per capita* wealth of other countries. Account for the difference?

13. Classify labour according to quality. What sort of labour do we have in a large number in India?

14. Account for the industrial backwardness of the people of India. Can India become a leading country in manufacture? Give reasons to support your answer.

15. How is the population of India divided between towns and villages? How has this distribution or population been affected by the occupation of the people of India? How would you re-distribute the population of India to reduce the pressure on soil in certain areas.

16. Is the labour of the following productive? If so, what does it produce? The mason, the overseer of a gang of labourers, the broker, the merchant, the ekkawala and the professional gambler.

✓ 17. What do you mean by density of population? Account for its variation in different parts of India.

✓ 18. What is meant by efficiency of labour? How would you make the Indian labourer more efficient?

19. Account for immobility of labour in India. How would you try to make Indian labourer mobile?

20. What makes the individual worker efficient? How does the employer contribute to the efficiency of labour?

21. Of what use is the census of India to a student of Economics? Give the characteristic features of Indian labour. Discuss the effects of social customs on the mobility of labour in India.

22. State the principle of substitution and explain how it is availed of by producers.

CAPITAL.

✓ 1. What is Capital? Distinguish between Circulating and Fixed Capital and Acquisitive and Productive Capital.

✓ 2. Explain how capital is accumulated. Name the various motives that lead people to save. Is hoarding saving? If not, why not?

✓ 3. What is Free Capital? Specialized Capital? Give examples. Is land capital? If not, why not?

4. Define the term 'Capital.' Distinguish between Fixed and Circulating Capital. Which of the following are Capital:—

(1) Seed Corn, (2) A lawyer's knowledge of law, (3) Hoarded rupees. (4) The health of a coolie, (5) The good-will of a business, (6) Motor car of a doctor.

ORGANISATION.

1. (a) Describe the economic organization of an Indian village.

(b) Describe the changes that are taking place in the economic condition of India.

2. Describe the main features of the modern age of production.

3. Define division of labour and enumerate its advantages and disadvantages.

4. Of what importance is the principle of interchangeable parts in the mode of production that we have today? Is it useful for those that are using motor cars, bicycles, etc.?

5. What is a representative firm? Name the advantages that are enjoyed by such a firm. In what way will such a business be affected if sudden depression took place in the market with respect to the commodity produced by that firm?

6. Explain carefully how a cotton manufacturer would begin to earn large profits. What conditions would help him?

7. Mention five of the chief characteristics of our economic organisation and discuss one of them.

8. What are the advantages and disadvantages of competition? How can advantages be secured and disadvantages avoided?

9. What is division of labour? Explain how far it has been carried in modern industry.

10. Explain the following:—

(a) "It must be however remembered that the test applied to industry is not, is the output large? but, does it pay?"

(b) Enumerate the various divisions of labour. What do you understand by "territorial division of labour?"

✓ 11. Write short notes on any one of the following:—

(1) Localised industry.

(2) Attracting customers.

(3) Packing department.

(4) Specialisation.

✓ 12. What do you mean by the localisation of industry? Enumerate the advantages of a localised industry. Are there any localised industries in India?

ENTERPRISE.

✓ 1. What are the functions of an enterpriser? What other terms are used synonymously with enterpriser?

2. Explain the partnership form of management. What difference do you find between the partnership of business, and joint stock company?

EXCHANGE.

1. Define value, and show how values in use are influenced by values in exchange.

2. What is meant by Barter? Why did Barter fail? Do both parties gain in exchange?

3. In what manner has exchange been facilitated by the introduction of money as a medium of exchange?

4. Distinguish between a Demand Schedule and a Demand Curve. Construct an imaginary Demand Schedule and corresponding Supply Schedule, and explain where the price will be located.

5. What is a Market? Distinguish between a World Market and a Municipal Market.

6. Distinguish between Market Price and Normal Price. Why is the latter called a long period price?

7. Explain the statement "Foreign Exchange is an exchange of goods for goods."

What is meant by the term 'favourable balance of trade?' When did Indian have an unfavourable balance of trade during the last seventy years, and why?

8. What effect did the Industrial Revolution have upon the industry and trade of India? How were agriculture and arboriculture affected?

9. Trace the effect of the development of means of transportation and irrigation upon the prosperity of India. Why should both be developed side by side? How far did the Government carry out the policy of developing them simultaneously?

10. Explain the quotation given below :—

“It may be more cheap to export raw goods and import manufactured goods. But if India is to win stronger position as buyer and seller in the markets of the world, she must deepen the channels and regulate the action of her stream of production..... If the concentration of the agents of production on a great variety of undertakings is to prove advantageous, it must be on industries unaffected by drought. If the natural forces of industrial competition have not accompanied that aim then deliberate and determined action alone can achieve it.”—(Loveday)

11. Estimate the position of the trader or the middleman in the economy of the Indian Internal Exchange. It is said that in a small village it is not profitable at all to open a shop, and that is why the system of weekly markets, etc., came into being. Explain why a shop cannot be maintained in a small village.

To what extent is it the effect of the Standard of Living?

12. What are the chief characteristics of the Indian Foreign Trade?

13. Draw an imaginary Demand Schedule of an individual for a commodity showing lowering of the

schedule when income falls, and raising when it rises. Draw the curves as well.

14. What is meant by the term 'Elasticity of Demand?' Arrange necessities, comforts and luxuries in order of the elasticity of demand for them. Give examples and draw curves.

15. Discuss the relation of price to expenses of production in different periods of time.

16. What is meant by Supply and Demand? How is price determined?

17. Explain the Law of Demand. Distinguish between elastic and inelastic demand and give examples of each. How does a Demand Schedule differ from a Demand Curve?

18. Discuss the effects of competition.

Would charges for electric current have been less if there were four electric supply companies instead of only one? In what cases is co-operation more desirable than competition?

19. What is a Demand Schedule? A Supply Schedule? Make hypothetical demand and supply schedules for sugar in your district. (Take the population of the district being about two millions.) Explain how you arrive at this price.

20. If the exchange of Indian food grains with English cloth takes place at a fair rate, which country would be the gainer?

21. What effects on prices should be expected from an invention that makes possible the carrying of fresh milk from distant places to Calcutta?

22. Select an Indian commodity in common use. Has any change taken place in the extent of the market for this commodity? Give reasons in support of your answer.

23. In a given market at a given time—

A	is willing to buy	800	mds. of wheat	at Rs. 8	a md.
B	" " " "	1,000	" " " "	" " 6	" "
C	" " " "	1,200	" " " "	" " 5	" "
D	" " " "	1,500	" " " "	" " 4	" "
X	" " " sell	1,000	" " " "	" " 3-8	" "
Y	" " " "	2,000	" " " "	" " 4-4	" "
Z	" " " "	3,000	" " " "	" " 5-8	" "
W	" " " "	1,500	" " " "	" " 8(?)	" "

What would be the market price in this market and why? Who would be the marginal pair?

24. What are the causes of the rise in the price level?

Prepare index numbers from the following data:—

	1900	1901	1902.
	Rs.	Rs.	Rs.
Iron	50	53	51
Wheat	4	3-8	4-4
Cotton	1	0-12	1-4
Wool	4	3-8	4-8
Leather	2	2-8	3

What do these index numbers indicate?

25. Explain the following statements made by Moreland :—

- (a) Price depends upon supply and demand and *vice versa*.
- (b) “The production of wealth as well as the consumption is diminished in a community where any considerable proportion of the members adopt a religious way of life.”

MONEY.

1. What is meant by free coinage? Is there free coinage in India?

2. Define the following :—

- (a) Standard Money, (b) Token Money,
- (c) Credit instruments, (d) Representative Paper Money.

3. Distinguish between Seniorage and Brassage. Does the Government charge any seniorage on the Indian coins?

4. What is meant by legal tender? Name the coins that are legal tender in India and also the extent to which they are?

5. What is Gresham's Law? Explain why it is true. Are there any exceptions?

6. What are the factors that determine the value of money? What is the effect of the increase in the volume of money upon prices?

7. What is a Bill of Exchange? What are the internal Bills of Exchange used in India?

8. Distinguish between a Letter of Credit, and a Cheque. In what manner do they facilitate exchange?

9. Explain the following terms :—

(a) Home Charges, (b) Convertible and Inconvertible Paper Money, (c) Gold Exchange Standard, (d) Appreciation and Depreciation of Currency.

10. Do you make a loan to the Government when you receive currency notes as money?

What is meant by fineness of coin? Give Indian examples.

11. What is meant by (a) limited legal tender, (b) bad money, (c) heavy money, (d) appreciation of money; (e) inconvertible paper money?

Can money disappear from circulation? If so, how?

12. Would an increased supply of money affect the crop from any piece of land or butter from any cow?

13. What is meant by (a) legal tender, (b) token money, (c) brassage, (d) seniorage, (e) free coinage? Use Indian illustrations if possible.

14. Explain and clearly distinguish between debasement and depreciation. What is Gresham's Law? What dangers attend the issue of paper money in large quantities?

15. How would you make payment to the Times' Book Club, London, for a large number of books purchased by you from the Club? What is C. O. D.?

DISTRIBUTION.

1. What is meant by the Distribution of Wealth? Name the shares. To whom does each of these go?

2. What does the National Dividend consist of? Does it include services as well?

3. Show as clearly as you can that the forces governing, are also forces influencing distribution.

4. In what manner does the Marginal Productivity determine the remuneration?

5. Does the Marginal Productivity theory of distribution assert that the owner of each unit of a factor in Production gets the actual product of that unit? Explain clearly.

6. Bring out as vividly as you can the relation of the Law of Diminishing Returns to the problem of Marginal Productivity. Give examples.

7. In accordance with the Marginal Productivity Theory of Distribution, is the reward of each of the factors determined independently of the rewards of the other factors? Give reasons.

8. Mention the chief kinds of goods necessary in order to produce any commodity. State how the services of each of these kinds is remunerated.

9. Describe the distribution of grain on the threshing floor of an Indian village. Name all the

people who obtain shares and state what services they have performed. Can you group these into four or five 'factors of production?' Are the shares fixed by custom or by competition?

10. What is National Income or National Dividend? Explain as clearly as possible the relation of National Income to the welfare of an individual and of a community? Is satisfaction limited by the output?

RENT.

1. Define Rent. Why is rent paid at all for the use of the land?

2. Enunciate the Ricardian Law of Rent. Why is it not applicable to India?

3. What is Economic Rent? How do you calculate it?

4. Where there is no non-rent land from which to measure, may we still think of Economic Rent as being measured by difference in Productivity? Explain.

5. Does rent enter into the cost of production? Is high rent of land a cause of high price of the product? Explain.

6. Distinguish between the Producer's Surplus and the Contract Rent.

7. Give the traditional law of rent. How far does it apply to India?

8. Discuss the influence of custom on rents, wages and prices in India.

9. Define and discuss rent. Is the relation of landlord and tenant essential to the idea of rent? Distinguish between economic rent, ground rent and contract rent. Which of these can be measured? Give reasons for your answer.

10. How is the rent of a farm determined? Distinguish between economic and contract rent. Mention the different classes of people who have been benefited by improvements in methods of cultivation and transportation in India. If you were renting land, would you pay more if you intended to grow wheat on it instead of oats?

11. In Bhutan ten acre plot of land range in productivity from 20 to 28 maunds as shown by the diagram which covers all the land to which the Bhutanis have access. Suppose that for each 100 of population a new plot has to be cultivated. What would be the total rent paid if the population were 900? 1800? 2300? 2900?

20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	24	24	24	25	25
25	26	26	26	26	26
27	27	27	28	28	28

Suppose all land rent were released, how would this affect prices? Give reasons in support of your answer.

12. What do you mean by the term 'land tenure'? In what manner has the Agra Tenancy Act of 1925 affected (a) the tenants, (b) the landlords?

INTEREST.

1. What is Interest? Distinguish between Interest and Rent.

2. Name the elements that go to make up Gross Interest over and above the Net Interest.

3. In what manner do the savings of the people affect the rate of interest?

4. Is it a sufficient explanation of interest to say that the interest is the excess of the output that is turned out when capital is used, over what would be turned out if labour would be employed without capital? Why?

5. What relation does interest bear to the discounting of wealth? In what manner is the latter affected by education?

6. In what manner does the Marginal Productivity Theory affect the interest? Explain it as clearly as you can.

7. What are the characteristics of persons and of incomes which influence the rate of interest? Show how the various influences operate to fix the rate of interest.

8. When you gladly pay to the Railway Company for having your travelling bag safely kept in the cloak room for a few days, why do you refuse to pay the

banker for keeping your money even for a number of months? Could the rate of interest go down to zero?

PROFITS.

1. What do you understand by Profits in the popular sense? What items should be deducted from the Gross Profits in order to get the Pure Profits?

2. What are the sources of profits? Is it socially desirable that the enterpriser receive profits in compensation for undertaking risks? Justify your answer.

3. Differentiate between bonds, debentures and ordinary shares.

4. What do you mean by the term 'profit'? Why a blacksmith sometimes seeks services in the Railway workshop instead of carrying on his business independently in his own workshop?

5. Select some Indian industries and account for the presence or absence of large profits in them.

WAGES.

1. What is meant by Wages? Under what conditions does a man pay himself?

2. In what manner does an increase in demand affect labour? And also an increase in the supply of labour? Under perfect competition amongst the members of a group having same efficiency, will there be two rates of wages? Give reasons in support of your answer.

3. Why is there an inequality between the wages of men and women? Why do rates of wages differ from occupation to occupation?

4. Does the reduction in the hours of labour lead to the productivity of the labour? What is the real justification for the shortening of the eight-hour day?

5. In what manner does the Standard of Living affect wages? Does a rise in the standard of living necessarily mean a rise in wages?

6. Define task wage. Why are the sweepers in India so low paid whereas the drain cleaners in America are paid very high wages?

7. Explain clearly the effect of Trade Unions upon wages. Account for the existing inequality of wages between the different classes of labour. Why do the wages of labourers in the villages differ from those in the towns? What fixes the relation between wages in different occupations?

8. Account for the existing inequality in wages. How are wages determined? Why do the wages of men and women differ?

9. (a) Why are washerman's charges higher in America than in India?

(b) Has a man to be paid to play?

(c) Would you like to work in a factory without getting any wages?

(d) If the Government orders every Indian to wear standardised costumes as uniforms,

what would be the economic effects of this order?

10. (a) Illustrate the difference between money wages and real wages. Why do people earn different wages in different occupations?

(b) If the rate of interest is determined by the demand for and supply of capital, what determine the demand for and the supply of capital?

11. Why do the wages differ in different occupations? Account for the difference in wages paid to men and women workers. Can Trade Unions raise wages? If so, how and to what extent?

12. (a) What is your idea of distribution?

(b) How does a man's standard of living influence his wages?

(c) How does an increase in population affect rents?

CONSUMPTION.

1. Indicate briefly the way to spend your income most economically.

A house-wife has to buy cloth, fuel, buttons, sugar and tea. She has Rs. 6-8-0 with her. Each unit of each of these commodities costs eight annas. How would she spend her Rs. 6-8-0 if the utilities of the different units were as follows:—

Cloth	Fuel	Button	Sugar	Tea
...	...	...	...	11
10	...	...	10	10
9	...	9	9	9
8	8	8	8	8
7	7	7	7	7
6	6	6	6	6

How would a reduction in price from eight annas to four annas affect her purchase ?

2. Define and discuss consumption and bring out very clearly the difference between the popular and economic sense of the term 'consumption.' Do you agree with Mill when he says that saving and spending both are consumption ? In case you do not agree with him, give reasons for your disagreement.

3. (a) Illustrate with examples the following statement:—

“The food possesses utilities, *i.e.*, power to satisfy wants, and just as we measure production by the amount of utility created, so we measure consumption by the amount of utility enjoyed.”—(Penson)

(b) Explain the following statement with reference to the rise of fresh wants and its effects upon the civilization of the nation. “Appetite comes with eating.”—(Penson). Do you agree with

Mahatma Gandhi's proposal of cutting down the wants to mere subsistence level? Give reasons in support of your answer.

4. How many kinds of consumption are there? Is there any distinction between consumption and production goods, wealth and capital? Give illustrations to make your answer clear.

5. What is national income? Explain as clearly as possible the relation of national income to the welfare of an individual and of a community. Is satisfaction limited by the output?

6. Enumerate the main characteristics of wants, and point out those upon which important laws of economics are based. Which important law is based upon competitive wants? How does this characteristic affect the distribution of our income? Do we make a selection out of those commodities that satisfy the same wants? What is the criterion of choice?

7. (a) Enumerate and discuss different kinds of wants.

(b) What is standard of living? Is it a fixed thing? What bearing does it have upon the industrial efficiency, or the social and political organization, or on the development of the people as a whole?

8. (a) What is the measure of utility?

(b) Define and discuss (1) the laws of diminishing utility and marginal utility, (2) consumer's surplus, (3) total utility.

9. Discuss the economic aspect of spending.

10. How do you distinguish between expenses of production and expenses of consumption? Make a list of principal expenses of production and of consumption of an Indian cultivator.

11. Enumerate and discuss the various characteristics of wants, and point out the part that they play in the science of economics? Give examples where necessary.

12. Define utility and differentiate between total utility and final utility; if possible give illustrations.

13. Enumerate the chief characteristics of wants. Are all wants satiable? If so, why? If not, why not?

14. What is Engle's Law of Consumption? Does it hold good among your acquaintances? If your income were Rs. 50 monthly, what proportion would you be likely to spend on food, on clothing, on other purposes? If it were Rs. 125? If it were Rs. 15?

15. What income per month would you consider necessary in Allahabad to provide a family of five with (1) the 'necessaries of life,' (2) a reasonable amount of the 'comforts,' and (3) some of the 'luxuries'? Explain what you mean by the Standard of Living of Families with the incomes you have just mentioned.

16. State the Law of Diminishing Utility and discuss the reasons for believing it is true.

17. What is meant by 'Consumer's Surplus'? Can you always measure it in terms of money?

18. Select an article of (a) luxury, (b) comfort, and (c) necessity used by you, and give graphical representation of the Consumer's Surplus enjoyed by you from their use?

19. What is truly an economic method of spending one's income?

A man has Rs. 20 with him. He has to buy food, clothing, shelter and ornaments. Each unit costs Re. 1. How many units of each commodity would he purchase if the utilities of the different units are as follows :—

Food	Clothing	Shelter	Ornaments
10	8	6	3
9	7	5	2
8	6	4	1
7	5	3	0
6	4	2	
5	3	1	
4	2	0	
3	1		
2	0		
1			
0			

20. How does an individual spending his income affect (a) producers, (b) other consumers? Are wastage and use of luxuries profitable?

21. "Our wants evoke our activities and our activities evoke fresh wants." Comment. "The physical environment is in reality the basis of all economic activity, but man can modify his environments."

Explain and illustrate this statement with Indian examples.

22. Enumerate and discuss the various characteristics of wants and point out the part they play in the science of economics ? Give examples where necessary.

23. Define utility and differentiate between total utility and final utility ; if possible, give illustrations.

24. Criticise from the economic point of view the following edict passed by Ibn-i-Saud's Moral Council, established recently to improve the morals of the people :--

"That population must not trim or shave their beards, must clean shave their heads, or leave their beards entirely uncut, and any way avoid European styles. That they should not wear gold ornaments, or silken cloths, and also should not wear titles and decorations awarded by ex-king Hussain."

25. What is luxury ? Is luxury justifiable ? If so, under what circumstances ? Will you keep a cook who cooks more food than you can eat at one meal simply on the ground that God has created ravens and other birds and they must also be fed ? Why do you rebuke and fine your servant when he breaks your plates ?

26. Define and discuss wealth. Are the following wealth :—

(1) Sand in the builder's yard.

- (2) Air to the diver.
- (3) Jumna River.
- (4) A Canal.
- (5) Sunshine.

TAXATION.

1. What do you mean by (a) direct and indirect taxes, (b) incidence and impact and (c) taxes and local rates ?

2. Distinguish between—

- (a) Taxes, fees and rates.
- (b) Direct and indirect taxes.
- (c) Productive and unproductive expenditure of Governments.
- (d) Incidence and effects of a tax.

Examine the Indian Tax System and say how far it approaches perfection.

On whom do the following taxes fall :—

- (a) Import duty on Manchester cloth brought into India.
- (b) Excise duty on Indian cloth.
- (c) Export duty on Indian jute.

3. What are the heads of income and expenditure of the Government of India ?

4. Name the sources of income of the Local Government and the District Boards.

5. Make an imaginary budget of the Bombay Municipal Corporation.